LECTURES ON SYPHILIS

G. FRANK LYDSTON, M.D.

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LECTURES ON SYPHILIS.

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Chicago College of Physicians and Surgeons.

BY

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TO

JOSEPH W. HOWE, M. D.,

LATE PROFESSOR OF CLINICAL SURGERY AT THE BELLEVUE HOSPITAL MEDICAL COLLEGE; SURGEON TO THE CHARITY HOSPITAL, AND TO ST. FRANCIS' HOSPITAL OF NEW YORK CITY,

THESE LECTURES

are affectionately inscribed, in memory of pleasant hours of study, by his sincere friend and grateful pupil,

THE AUTHOR.

PREFACE.

These lectures were originally published in THE WESTERN MEDICAL REPORTER, and they have been collected and republished in their present form, with but little revision. An earnest attempt has been made to present to the student a plain and practical idea of the subject of Syphilis, as taught by our most advanced pathologists and syphilographers, in conjunction with practical points drawn from personal observation in hospital and dispensary practice. The views of Fessenden Otis have been adopted, as the most logical and scientific which have yet been offered, in explanation of the pathological phenomena of the disease. It is hoped that these few lectures may prove more valuable to the student, than some of the larger and more comprehensive treatises.

125 State Street, Oct. 1st, 1885.

CONTENTS.

LECTURE I. Definition of syphilis. Its contagiousness and wide diffusion. Origin of the disease. Its decreasing malignancy. Duality of syphilis and chancroid. Experiments with animals. Period of incubation. The syphilitic cell. Harmony of the bacillar theory with the physiological pathology of syphilis.....PAGE 9.

LECTURE II. Initiatory period. Importance of the syphilitic cell. Anatomy and histology of local manifestations of the disease. Adenopathy. Varieties of induration. Necrobiosis. Chancrous secretion. Vaccinal syphilis. Poison bearing secretions of syphilis. Dependence of contagiousness on the syphilitic cell.....PAGE 29.

LECTURE III. Modes of transmitting syphilis. Absence of primary syphilis in fœtal infection. Infection by kissing. Colle's law. Danger of infection by syphilitic child. Illustrations of methods of transmission. Varieties and treatment of chancre. Mixed sores. Syphilitic bubo.....PAGE 47.

LECTURE IV. Period of general infection. Progression of syphilitic cells. Apparent periods of incubation. The roseola. Syphilitic fever or prodromes. Syphilitic sore throat. The papule. Alopecia. Onychia. Pustules, ulcers, mucous patches, tubercles, and condylomata. Iritis. Duration of active period.....PAGE 67.

LECTURE V. Period of sequelæ or tertiary period. Syphilomata, or gummata. Tendency to necrosis of gummata. Non-infectiousness of gummy material. Lymphatic obstruction. Stages of syphilis. Precocious syphilis. Syphilides. Duration of syphilis. Prognosis of syphilis. A typical case of syphilis.....PAGE 93.

LECTURE VI. Treatment of syphilis. Excision of chancre. Effects of mercury. Action upon the blood. Action of iodine. Proper time and method of giving mercury. Duration of treatment.....PAGE 113.

LECTURE VII. Evil effects of mercury. Popular prejudice against its use. Mercurial depression, ptyalism, stomatitis, rheumatism, and possible ulceration and necrosis. Iodides in syphilis. Injurious effects of the iodides. Questionable preparations in syphilis. Local measures. Syphilitic necrosis.....PAGE 133.

LECTURE VIII. Congenital and acquired syphilis in children. Methods of hereditary transmission. Intra-uterine syphilis, and syphilitic abortion. Masquerading of syphilis in children. Appearance of the syphilitic child. Hutchinson's description. Lesions in the child. Apoplectic effusions. Hydrocephalus. Sudden death. Prognosis and treatment.....PAGE 149.

LECTURE IX. The nursing of syphilitic children. Possibility of healthy child being born of syphilitic mother. Attenuation of virus. Hutchinson's views. Escape of child after seventh month of pregnancy. Insusceptibility to infection. Danger of infection in nursing. Desirability of artificial feeding.....PAGE 169.

APPENDIX.

Selected formulæ for the treatment of syphilis...PAGE 177.

Lecture I.

Definition of syphilis.—Contagiousness of the disease.—Its wide diffusion.—Origin of syphilis.—Ancient knowledge of the disease.—Its present benignity as contrasted with former malignancy.—Explanation of the decrease in malignancy by evolutionary laws.—Duality of syphilis and chancroid.—Attempted inoculation of animals with syphilis.—Successful inoculation of the monkey.—Rapidity of absorption of syphilitic poison.—Second attacks of the disease.—Venereal diseases of the lower animals.—Duration of incubation period of syphilis.—Peculiar induration of chancre.—Nature and local results of the syphilitic materies morbi.—Properties of the syphilitic cell.—Its effects and importance during the natural course of syphilis.—Harmony of the bacillar theory with the "physiological pathology" of syphilis.

Gentlemen:—We take up this morning the most important subject which it is my privilege to present to you, and the most interesting of those affections classed as venereal diseases. Syphilis, or as it is sometimes termed "lues", is a dyscrasic or constitutional affection of the type known as "blood diseases," due to the infection of the organism of a human being with a peculiar morbific principle, or virus, or hypothetically, a germinal disease cell, unknown as an entity, but plainly manifest in its pathological results. Its manifestations are, to all intents and purposes, a lesion which is primarily local, but which is followed by a succession of morbid constitutional manifestations appearing at variable intervals, running a somewhat definite course, and being more or less amenable to treatment. The virus of syphilis has not yet been isolated, although we are justified in

the hypothesis that it is a degraded cell of microscopic size, and possessed of most potent evil propensities. In many respects syphilis resembles the exanthemata, inasmuch as it is transmissible from the diseased to healthy individuals, has a period of incubation, a stage of eruption, another of decline, and a period of true sequelæ. A very minute quantity of the syphilitic virus is sufficient to produce the disease, although it is fortunately only contagious, and not infectious, in the proper sense of the term. The wide diffusion of syphilis through the human family, will not be fully appreciated by you, until you enter private practice, when, especially if your field of labor lies in a large city, you will soon come to believe that no one is above suspicion. Perhaps this is an exaggeration, but it is certain that syphilis, like accidents, is liable to occur in the best regulated of families, and often serves to explain otherwise obscure cases of aristocratic aches and invalidism.

The origin of syphilis is not definitely known, but it is probably quite an old and respectable disease inasmuch as it is more than likely that some of the forms of leprosy of bible times, were instances of syphilis. Indeed, syphilis and leprosy were confounded only a few centuries ago. Nearly all accounts of syphilis state that the disease ap-

peared in Southern Europe in the latter part of the fifteenth century, the supposition being that it was imported from America by the sailors who accompanied Columbus or Amerigo Vespucci upon their expeditions. The morals of the country at that time being none too rigid, the disease spread rapidly, being later mistaken for leprosy. It has since been recognized in every part of the world, as a distinct disease, and has come to be quite well understood. There is a fact connected with the history of syphilis, which is not generally known, that may be of interest: I am informed upon reliable authority, that the disease was described by the Japanese historians several thousand years ago, and that documents are still in existence, which contain ancient descriptions of the affection, that are exceedingly accurate. This would indicate the Asiatic origin of the disease, it having been brought to America by those nomadic tribes who settled this country some centuries ago, when America and Asia were united by the peninsula now represented by the Aleutian Islands. As still further evidence of the antiquity of syphilis, may be mentioned the fact that recent translations of ancient Chinese medical writings show that the disease was known in China two thousand years ago. Moses was undoubtedly familiar with the disease, a fact which

makes it still more ancient and respectable. During the earlier years of the existence of syphilis in Europe it was so malignant and widely disseminated, as to have been recognized as a form of plague, which created great havoc, and in fact nearly destroyed the various armies of the countries afflicted. The disease has gradually grown milder in type until at the present day the very severe and exceptional cases have come to be classed under the head of "malignant." Now there must be some explanation for this, and I think it would be well to digress slightly, and see if we cannot find logical reasons for the steady diminution in the virulence of syphilis. In the first place it is obvious that improved sanitation, with a steadily increasing knowledge of the pathology, and the consequently more rational measures of treatment of any particular disease, must eventually result in modifying its severity. This has been especially true in the case of syphilis, but I think there is another more powerful influence which is constantly manifesting itself in the case of contagious diseases in general, viz: the fact that disease occurring in individuals of one generation imparts a certain degree of immunity to their descendants.

A very interesting article bearing upon the influence of heredity and natural selection in modify-

ing different contagious diseases, has been recently written by Prof. Lyman of this city, which is so logical in its application to these different affections, that I think we may apply it to syphilis as well. The doctor cites as an illustration of his views, the extraordinary malignancy of measles among the natives of the Sandwich Islands, a few years since. These people were never affected by measles until it was imported by the whites, and consequently had not acquired tolerance of the disease. Although the population of these islands was almost decimated at the time, the disease has steadily decreased in its malignancy ever since. Another illustration cited, is the peculiar malignancy of variola among the negro race. Small-pox was unknown in Africa until imported by Europeans, and after its introduction created fearful havoc among the natives. It has not yet had time probably, to become very markedly modified, but a steady modification is to be expected. When an epidemic attacks a community it attacks those susceptible to the disease, and modifies their organisms in such a way that they become tolerant of future attacks and this tolerance they transmit in a measure to their descendants. A certain number of individuals are insusceptible to the epidemic influence, and consequently escape the disease. This insuscepti-

bility is also transmitted to the next generation. These facts illustrate the influence of heredity. As I have stated, a certain number of individuals are primarily insusceptible to the disease and consequently escape it, while those individuals who are susceptible to it, are attacked, with a fatal result in the case of those least able to withstand it. This illustrates the influence of natural selection. Applying this theory to syphilis, we may readily see that the disease has probably destroyed those subjects least able to resist it, and that the immunity from the disease acquired by exposure to its influence in the case of those who survived, and the primary insusceptibility of a certain proportion of individuals have been transmitted to successive generations, until at the present day syphilis is a comparatively mild affection. It is of course admitted that the insusceptibility of one generation, may depend upon the inheritance of unequivocal syphilis from the parent stock, but in certain instances the transmitted impression is very attenuated.

One of the most important results of modern scientific medical research, has been the establishment of the duality of the poisons of syphilis and chancroid. The experiments proving this have been numerous and conclusive, yet, strange as it may seem, there are those who continue to believe

in their unity.* This difference in opinion has resulted in a division of authorities into "unicists" and "dualists". The obscurity which formerly clouded the minds of surgical authorities, regarding the venereal diseases, seems very remarkable to us, who have taken advantage of their errors. John Hunter, the greatest surgical philosopher of the eighteenth century, believed that there was but one venereal disease, and that a constitutional affection. He believed this, because he had produced constitutional syphilis in himself by inoculating his arm with gonorrhœal virus. He labored under this delusion until the day of his death. Fully half a century later, Ricord demonstrated the error of the great master, but he himself did not recognize the difference between syphilis and chancroid. Fifty years later, their duality was shown by Bassereau, one of his own pupils. I will not enter into a lengthy discussion of the different authorities and methods of research proving the duality of the two poisons, for the fact is generally accepted; but I will mention a few facts bearing upon it. We can all fully appreciate one of the most powerful arguments of tho unicists, viz: "That general symptoms frequently follow

*Among those who adhere to the old theory, may be mentioned Kaposi. Many prominent English surgeons are also unicists, hence the confusion of terms existing in most English works upon syphilis. With them, chancroid is also and erroneously termed, "local syphilis."

an apparently non-indurated, simple sore, but these cases are simply exceptions to a well established rule. I have seen, it must be confessed, very innocent looking sores followed by secondary syphilis, but quite rarely; sufficiently often perhaps, to render me cautious in the matter of prognosis in every sore, however innocent looking; but not often enough to shake my own convictions as to the duality of syphilis and chancroid. When chancroidal poison is deposited upon a raw surface and said surface is cauterized soon afterwards no chancroid results. If, however, the syphilitic virus as contained in the secretion of a chancre or syphilitic ulcer, be thus inoculated and cauterized, syphilis will result, as a rule. Hill cauterized a ruptured frænum twelve hours after intercourse, but syphilis developed as if nothing had been done. Fournier cauterized a chancre six hours after its appearance, but syphilis followed. Excision of the primary sore has been practiced, and has recently been revived, but has not as yet been proven to prevent the development of syphilis. It has seemed to modify it in certain instances, and in two personal cases, the subsequent secondary manifestations were very mild. This proves nothing however. The facts that I have given you are sufficient in themselves to prove the non-identity of

syphilis and chancroid. Syphilis is essentially constitutional, (even if primarily local) while chancroid under all circumstance is a purely local affection.

Attempts at the inoculation of animals, with syphilis and chancroid have shown a marked difference between the two diseases. Syphilis is not transmissible to the lower animals while chancroid is, although with a certain amount of difficulty. Depaul, however, speaks of a syphilitic monkey, and Martineau has recently claimed to have produced a hard chancre upon the penis of a monkey. This animal was afterwards exhibited to the French academy, with unequivocal secondary lesions, thus proving the communicability of syphilis to the monkey. Neumann, however, in some recent experiments upon monkeys, cats, dogs, rabbits, and horses has failed to produce syphilis. If the statement that syphilis is transmissible to the monkey alone, of all other animals be true, it would seem to be a powerful support to the Darwinian theory. The course of syphilis and chancroid is sufficiently distinctive in typical cases. In conclusion, we might ask the unicists why, if the poisons of syphilis and chancroid are identical, all venereal sores are not followed by constitutional symptoms, when allowed to run their natural course without

interference, and why also, all sores are not auto-inoculable?

Syphilis may be either hereditary or acquired, and is essentially the same in its manifestations in either instance, save that, as we shall see later on, hereditary syphilis has no primary stage. Acquired syphilis is in every instance due to confrontation and inoculation with a peculiar poison or virus derived originally from some individual suffering from the disease, and which virus is contained in either the secretion of a syphilitic lesion, or blood from a syphilitic subject.

The length of time necessary for the absorption of the syphilitic virus after the inoculation of a healthy tissue, is unknown, but it is unquestionably very short, although no direct experiments have been made. Abrasions have been cauterized within six hours after suspicious intercourse, and yet syphilis has developed. Hill, as before stated, relates a case in which he cauterized a ruptured frænum within twelve hours after exposure, and in which syphilis followed. Numerous experiments have been made upon poisons bearing an analogy to the syphilitic virus, which are very instructive and allow us to draw some conclusions with reference to syphilis. The experiments with the virus of vaccinia have been especially interesting. Seven

children were vaccinated by Martin and the site of the operation destroyed by Vienna paste at periods varying from one to twenty-four hours thereafter. None of the children had vaccinia; but all but one were protected from variola as was proven by the failure to inoculate them by a second vaccination. Clerc vaccinated a number of children, destroying the spot with nitrate of silver one hour afterwards, but vaccinia was not prevented. These experiments suggest that possibly vaccinia consists of two essential elements; a local and a constitutional, which permits the destruction of the morbid impression causing the local process without any modification of the constitutional manifestations of the virus. Whether the same view may be taken of syphilis, remains to be seen. In France, numerous experiments upon animals have been made by different surgeons, with the poison of glanders. The seat of the inoculation has been excised within one minute after the introduction of the virus, yet glanders was not prevented. It is probable that the virus of syphilis is not absorbed as quickly as some other poisons, but reasoning from the experiments cited, the period required must be very short.

Unlike chancroid, true syphilis is very rarely contracted twice. Second attacks, however, have been reported. Diday has collected twenty-five

such cases, twenty of which were in his own practice. These cases are especially interesting, both from their rarity and the fact that they most conclusively prove the curability of syphilis, for were the disease not curable, a second attack would be impossible. A few of Diday's cases were contracted during the existence of tertiary manifestations of the previous attack, and this too is an important fact as showing that the "tertiary syphilides" are not syphilitic at all, but are simply non-transmissible sequelæ. The longer the interval beween the first and second attacks, the more severe the latter is likely to be, but in the majority of cases the second attack consists in the primary symptoms alone without any further manifestations of the disease. This of course, lends color to our doubts as to the accuracy of the diagnosis in different cases. I have seen in my own experience two cases which I believe to have been a second attack of true syphilis, the data of which I am unfortunately unable to present to you. In each case there had been a previous attack of true syphilis which had been diagnosed by two prominent gentlemen, one of whom was no less an authority than the late Dr. Bumstead. There is no doubt in my own mind as to the condition for which I treated these men, and I can hardly question the accuracy

of the first diagnosis. There are several sources of fallacy in determining the existence of a second attack of syphilis, which must be remembered. 1st.—In the first place you may have some coincident eruption accompanying chancroid. 2nd.—Ecthyma may be mistaken for true syphilis, and, if following a genuine attack, be cited as a case of second infection, or the first attack may have been ecthyma, and the second true syphilis. 3rd.—A chancroid or mucous patch may become the seat of such marked inflammatory induration that it is mistaken for true chancre. 4th.—A tertiary gummy ulcer may be taken for hard chancre.

I have already mentioned the non-transmissibility of syphilis to the lower animals and cited the exception of the monkey as claimed by Martineau. It is, as we have already seen, a demonstrable fact that syphilis differs markedly from chancroid in this respect. But it is claimed that animals also have venereal disease, or affections contracted only through sexual intercourse. There is an affection somewhat analogous to syphilis which affects horses and asses. This disease, termed the doury, is only transmitted during sexual intercourse. It develops after an incubation of four to six weeks, with the phenomena of fever and cutaneous tumors, and sometimes the mucous mem-

branes, eyes, and bones may undergo pathological changes, atrophy or paralysis sometimes following in extreme cases. The disease lasts from a couple of months to three years, and is not auto-inoculable. A local contagious venereal disease is also seen in these animals according to Lancereaux. Inasmuch as these affections differ from syphilis in a marked degree, and particularly in the matter of inoculability, their analogy to that disease is probably very slight. It would seem that mankind has the sole monopoly of the doubtful luxury of syphilis.

After the poison of syphilis has been absorbed, a certain period elapses before its morbid effects become manifest. This period is known as the stage of incubation, and lasts upon the average about twenty-one days. but varying considerably from this in different cases. Fournier relates a case in which the period was seventy-five days, Guerin, one of seventy-one days, and I have myself noted one case of seventy days. Instead of being prolonged the period may be shorter than usual, thus Hammond relates one of three days, and the late Dr. Nott, of New York, reported his own case as developing within twenty-four hours after wounding his finger in operating upon a syphilitic subject. Dr. R. W. Taylor, of New York, reports one case in which the initial lesion appeared upon the second

day, induration upon the fourth day and general symptoms during the sixth week, and another in which the chancre appeared at the end of the first, and the general symptoms during the fifth week. Practically, gentlemen, we may accept the statement that as a rule, true chancre does not appear before the tenth day. Any sore appearing prior to that time, is probably chancroid, while any appearing later, is quite likely to be true chancre. This is a useful practical rule to remember, although it must be confessed that it is often of little service in diagnosis, inasmuch as the majority of individuals contracting venereal disease are in the habit of promiscuous intercourse, and therefore absolutely unable to determine which of their numerous adventures has been the unlucky one. Whenever the induration of a sore is characteristic, we are of course, in no wise dependent upon the period of incubation for a diagnosis.

Induration of a peculiar type is the distinguishing feature of a syphilitic chancre and the manner of its formation and its histological characters are consequently a matter of considerable importance. This brings us to the consideration of the pathological changes of syphilis, or as Otis terms it, the "physiological pathology" of the disease. We ought naturally to begin our study of the subject, with

the consideration of the primary or initial lesion, and beginning at the seat of infection we have a number of quite important changes. We have first the absorption of a peculiar morbific principle or "virus," which although unknown as an entity is only too plainly manifest in its pathological effects.* The most probable view of the nature of this virus is, that it consists of a degraded infectious cell of very minute proportions. However lacking we may be in positive knowledge of its nature, we at least have tolerably definite views of the manner of its action. The first effect of the syphilitic virus, is the production of a gradually increasing accumulation of lymph or white blood cells at the site of inoculation, which is brought about by a modification of the normal leucocytes and connective tissue elements, by what we will term the "syphilitic germinal cell." This modification probably begins immediately after the absorption of the poison, but is more or less gradual in manifesting itself, hence we have a certain period elapsing before evidences of its action are exhibited. These accumulated cells, previously normal, contain the "germs" of the syphilitic poison, and their constitution is now

*I regard the bacillus claimed to have been discovered by Lustgarten, as yet to be proven. In any event, its existence does not modify the pathology of the disease, for Lustgarten claims that it acts by incorporating itself with the white corpuscles.

greatly modified. They have become larger, more granular, and contain numerous nuclei, are infectious, and have their powers of proliferation and amœboid movement exaggerated. In addition they present a marked tendency to retrograde metamorphosis. When removed from their original situation to the tissues of a healthy individual, these cells, by virtue of their infectiousness, produce changes in the normal leucocytes in their new environment, exciting rapid proliferation in them, as well as undergoing rapid changes themselves. Now, how does the "syphilitic germinal cell" act upon the normal leucocyte? It is claimed that through degradation the syphilitic germinal cell may be but 1-100,000 of an inch in diameter, being perhaps merely one of the nuclei of some infected and degraded leucocyte, but retaining all its morbid powers of proliferation and amœboid activity, the latter being especially marked. As the white blood cell or normal leucocyte is 1-2,500 of an inch in diameter, it is obvious that by virtue of the peculiar affinity of the syphilitic germinal cell for it, the two may become incorporated, with the result of the modification of the leucocyte which I have described.*

*By supposing an incorporation of the bacillus of Lustgarten, with the leucocyte, instead of the hypothetical cell described, we can at once harmonize the bacillar theory of the origin of syphilis, with its "physiological pathology."

Now gentlemen, I wish to impress upon your minds a thorough understanding of the nature of the modified cell which I have described, for a knowledge of this cell is the key to the study of syphilis. Just as the leucocyte is the primordial cell in the normal physiological processes of growth, so is it the basis of all pathological processes,—and particularly those of syphilis—when it is modfied in the manner peculiar to the particular morbid change in the tissues. Taking as our point of departure, the initial lesion of syphilis, we have a localized proliferation of this very cell, and following it in its course, we have thickening of the lymphatic vessels and enlargement of the lymphatic glands, produced by this same cell accumulation. The cell now travels on, enters the receptaculum chyli, and is finally emptied into the circulation by the thoracic duct, to be then driven to the superfices of the body with the general blood current. In the different tissues we now have various secondary phenomena, and we will briefly consider some of them. General enlargement of the lymphatic glands occurs, as a result of the proliferation of the cells carried to them by the blood, and an accumulation of infected germinal material collected by the absorbents from the superfices. Engorgement of the fauces and pharynx now occurs and is due to a "localized cell accumulation" in the rich net-

work of lymphatics, which as we shall see later on, is a marked feature of the anatomy of the fauces, tonsils and pharynx. Mucous patches are likely to occur, and are simply papules upon moist mucous surfaces, due to a circumscribed collection of the characteristic cells. The same description will apply to the true papule upon the integumentary surfaces. This papule may have an excessive accumulation of cells, and become a tubercle, or, from pressure upon and interference with the nutrition of, the normal tissue elements by the cells, in combination with their own tendency to retrograde metamorphosis, we may have a pustule formed which may break and result in ulceration. Nodes or peculiar periosteal swellings occurring in syphilis, are simply collections of proliferating syphilitic cells. You will notice that I have not mentioned syphilitic roseola, and you perhaps fail to see how we are going to explain it, but by a little roundabout pursuit, I think we can again catch our cell at work, not this time by a localized accumulation, but producing the syphilitic roseola by its effect upon the sympathetic system, which becomes manifest in capillary dilatation and stasis. I think I have shown you the potency of the syphilitic cell in the pathology of syphilis, and I will next endeavor to demonstrate the therapeutic importance of a thorough knowledge of its properties and actions.

Lecture II.

Initiatory period.—Importance of a knowledge of the properties of the syphilitic cell in the therapeusis of the disease.—Anatomy and histology of the chancre and of syphilitic lymphitis and adenitis, so-called.—Condition of glands in general adenopathy.—Definition of the initiatory period.—Varieties of induration of chancre.—Cause of chancrous "ulcers."—Extent of induration.—Duration of i duration.—Character of chancrous secretion.—Cicatrix of chancre.—Chancrous secretion not auto-inoculable.—Course of syphilis in hetero-inoculation.—Vaccinal syphilis.—Multiple chancre.—Poison-bearing secretions of syphilis.—Necessity for the presence of the syphilitic cell in contagious secretions of syphilis.

Gentlemen:—In my last lecture, I endeavored to demonstrate in a general way, the pathological importance of the syphilitic cell, by following it in its tour of mischief, and noting briefly its results. Now, as I have already stated, this cell is not only important as regards the pathology of syphilis, but a knowledge of its properties and actions, is absolutely indispensible to the intelligent application of remedies to the cure of the disease. We will premise that the natural course of the syphilitic cell is to accumulate in, and obstruct, various tissues, thereby forming neoplastic masses very similar in structure to inflammatory neoplasia, and finally to undergo retrograde metamorphosis and elimination, which result eventually in spontaneous cure of the disease.* The danger of permanent injury to the tissues is proportionate

* Vide Otis, "Physiology and Pathology of Syphilis."

to the amount of the accumulated cells, and the length of time they remain in contact with the normal tissues, thereby producing secondary changes in their structure. Understanding these facts, we most naturally seek for remedies, the administration of which tends to remove new formations and cell accumulations, by favoring or directly inducing retrograde metamorphosis in, and elimination of, such morbid material. These remedies will receive attention later on, as I now wish merely to impress you with the importance of an accurate knowledge of the pathology of syphilis in explaining the rationale of their action. You will readily appreciate the fact that a careful study of the characteristic cell which constitutes the basis of all syphilitic processes, will enable you to thoroughly understand the disease in all its manifold forms.

Now let us see how this little cell which I have already described to you, brings about the various changes characteristic of syphilis. As we have seen, the first manifestation of syphilis is a peculiar lesion characterized by induration. This is due to a localized accumulation of cells, which are infiltrated in the meshes of the connective tissue, and the adventitia of the blood vessels, forming a circumscribed mass. The cells vary somewhat in their general characteristics, those in the coats of

the vessels being either round, spindle-shaped, or branched, but the bulk of the mass consists of the characteristic round, multinucleated granular cell, which we have already known to be a modified leucocyte. These changes are very similar to those seen in simple dermatitis excepting that there is no serous exudate, the induration being consequently dry and hard. This absence of fluid is due to the thickened walls and contracted lumen of the vessels, which renders it difficult for the serum to exude from them. For the same reason, there is anæmia and innutrition of the neoplasm.*

The small blood vessels throughout the body are surrounded by "peri-vascular lymph spaces", and it is even claimed that the tunica adventitia of the smaller vessels is really a part of the lymphatic system. You may thus readily see how intimately the blood and lymphatic vessels are associated. There is a constant current from the tissues to the lymphatics, and it is very evident that after a time the morbid cells about the neoplasm must necessarily as they extend, enter the lymphatic circulation. This explains the circumscription of the induration, the cells, after a certain time, being removed as fast as formed, thus limiting their local development. We will now assume the ground that the first manifestations of syphilis are purely

* Vide Besiadecki.

local, and see if we can give a logical explanation of them.

In a few days after the development of the initial induration of syphilis, or chancre, the lymphatic vessels leading from the infected surface begin to enlarge and become hardened, feeling often like pieces of pencil or wire under the skin. This is due to a low grade of inflammatory change, asociated with a localized cell proliferation. Now, it may seem strange to you that this alteration in the lymphatics does not occur immediately after the appearance of the chancre, instead of after an interval of some days, but it is explained by the fact that the cell accumulation constituting the chancre must extend until a lymphatic vessel of some size is reached before the cells can enter the lymphatic current, the absorptive power of the small lymphatics being annulled by pressure and local irritation. A strong argument in favor of this view is the fact that the period of incubation is shortest, and the chancre smallest, in those parts most richly supplied with lymphatics. There is also less connective tissue proliferation in such localities. An example of this, is chancre developed beside the frænum præputii. The changes in the lymphatic vessels gradually extend along their course, the morbid and infectious cells meanwhile travelling

slowly on in the lymph current, and finally reaching the lymphatic glands. Enlargement of the glands now occurs, those nearest the primary sore being the first to enlarge, but general syphilitic adenopathy eventually occurring, and each gland, however small, becoming consequently a depot for the production, storing up, and finally the distribution of the abnormal cell growth. Each lymphatic gland, as the proliferation of cells goes on in its substance, becomes hard and woody to the touch, being nothing more or less than a neoplastic growth precisely identical with the chancre itself, and presenting the same microscopical characters. The changes at the site of infection, and in the lymphatic glands first involved, may be termed the "initiatory period" of syphilis, and up to this time no blood changes have become manifest, all the changes being apparently local. I will now leave the consideration of the progress of the syphilitic cell, inasmuch as we have traced it to its destination in the lymphatic glands. and allow it to remain undisturbed until we have given a little more attention to the initial lesion, and other important points in the study of syphilis.

In the first place the initial induration may present itself under several different forms, a study of which will be quite profitable.

1st. The first form is what is termed the parchment induration, which usually underlies an ulceration, and may escape notice unless carefully sought for by pinching up the lesion with the thumb and finger, in such a manner as to press lightly upon its edges without bending it. This is the commonest form according to some authorities, and I have found it so in hospital practice. The last four or five cases that I have met in private practice have, however, been beautiful examples of the Hunterian chancre.

2d. The induration may be somewhat like a split pea beneath the skin, its convex surface being capped by the ulceration. This induration is plainly marked, and freely movable with a feel like wood or bone, or perhaps more nearly like cartilage.

3d. The induration may be quite extensive and extend beyond the bounds of the ulceration, reaching very often, the size of a chestnut or almond. There may or may not be ulceration. When an induration of this description is ulcerated, its convexity is sometimes capped with a funnel-shaped ulcer, the whole constituting the so-called Hunterian chancre. We meet with many cases in which there is merely a hard purplish lump with no ulceration, or at most a very superficial erosion capping the induration.

4th. There is a variety of the parchment induration sometimes seen, which is especially apt to escape attention, so insignificant does it seem. It consists in a very superficial cell infiltration, presenting a very slight induration when lightly pressed upon. In appearance it is a slightly brownish patch covered by very fine scales, not unlike a minute patch of psoriasis.*

The occurrence of ulceration in the chancre is quite important, and is explicable aside from the various sources of irritation which may exist as an exciting cause, by the histological characters of the lesion. As we have seen, the chancre consists of a localized cell accumulation, which not only presses upon the capillaries, but actually invades their walls, thus causing a diminution of the blood supply and a relative anæmia and innutrition of the neoplasm and the tissue involved by it. This innutrition gives rise to molecular disintegration of the superficial layers of the lesion, which break down and form an ulcerated surface. This process is termed by Besiadecki, "anæmia of tissue," and by Virchow, "necrobiosis". The secretion of this ulcer is scanty when unirritated, for the same reason given for the hardness and dryness of the induration, viz., absence of serous effusion. It

* Called by Otis, superficial induration in the form of the "dry scaling patch."

contains, however, the syphilitic germinal cell, and is highly contagious.

The induration of chancre is variable in its extent according to the tissues in which it is situated, and is proportionate within certain limits to the extent of surface primarily infected, e. g., when a cut or abrasion is inoculated with the syphilitic poison, the resulting chancre is likely to assume the size and conformation of the traumatic lesion. Chancres of the nipple, lips, skin, and behind the corona glandis are likely to be extensively indurated. In such spongy tissues as the glans penis, the induration is apt to be very slight. The sparsity of connective tissue beneath the mucous membrane, and the extreme tenuity of the mucous membrane itself, will perhaps serve to explain the latter fact. In quite rare cases of chancre, or apparently simple lesions followed by constitutional syphilis, induration appears to be entirely absent, but this is perhaps due to the fact that it has been overlooked through inattention, or its co-existence with chancroid, or it is so slight as not to attract attention. After a chancre becomes phagedenic, induration at once disappears. In other instances a sore may not be watched long enough, or induration appears and disappears within a very short space of time.

In simple chancre the induration most generally precedes the ulceration, but it often follows it, coming on in the course of the first week. This is usually due to infection with some local irritant, chancroidal or otherwise, simultaneously with the syphilitic infection, and is the invariable course of mixed sores, and it is highly probable that the majority of cases in which induration follows, instead of preceding, ulceration, are primarily either chancroid, or simple exulceration. In fact I am inclined to believe that this is always the case, and we may accept the rule that, *syphilitic ulceration is always due to "necrobiosis" or "anæmia of tissue" unless there exists some source of irritation, simple or specific.* I emphasize this more particularly because this method of ulceration is the type of tissue destruction, seen throughout the entire course of syphilis, and I wish you to remember ulceration as in certain instances the result of simple innutrition from pressure and tissue obstruction. It matters not whether the molecular disintegration produced by the syphilitic neoplasia, or occurring within them, results in an open lesion, as an ulcer, or occurs in the form of a softening node or a pustule, the process is the same throughout. If you will but remember this fact, gentlemen, you will have no difficulty in comprehending the pathology of syphilis.

Induration of a chancre may be very transitory, and as I have already indicated, may disappear so rapidly as to be overlooked. It has been observed to last only twelve days, but such cases are very exceptional, the ordinary duration being from one to three months, but in rare cases lasting for some years. The discharge of a syphilitic chancre is very scanty and sero-purulent, for reasons already given, and retains these characters throughout, unless the sore becomes inflamed, in which case it becomes profuse and purulent, and perhaps bloody. Some cases of chancre appear to exhibit a marked tendency to bleed, and I have observed a number of cases in which this symptom was quite persistent and recurred upon the slightest manipulation of the sore.* The scar left by chancre, depends upon the depth of the ulceration, and in many cases nothing is left but a livid or ham-colored spot, which perhaps becomes of a coppery hue later on, and finally fades completely.

I have already mentioned the fact that syphilis is not auto-inoculable, this being a very important point in the differentiation of chancre and chancroid. Many attempts have been made with syphilitic secretions, and especially the secretion of the chancrous ulcer, but auto-inoculation has thus far been found impossible as a rule. When a chancre

*The so-called "hemorrhagic chancre."

is inflamed and secreting profusely, its secretion will produce a pustule if auto-inoculated, acting in precisely the same manner as any other irritant. This pustule may be followed by ulceration, but never by hard chancre. There is a question in my own mind, whether, if blood be drawn from an initial lesion before ulceration occurs, i. e. early enough in the course of chancre, it may not be capable of inoculating the individual possessing the lesion. This doubt is due to my inclination to the belief that syphilis is primarily local, and has been enhanced by a recent case which I have observed. I excised a large indurated chancre with a slight surmounting ulceration, from the penis of one of my patients, taking the precaution to wait until the process was apparently stationary, and the chancre fully developed. The ulcer was first cauterized to prevent contamination of the wound by its secretion, after which the indurated tissue was thoroughly excised, the incisions being made well beyond the borders of the diseased tissues. An irregular wound was left, which was closed with several catgut sutures. On the second day, the wound had united and everything looked well, but on the fourth day, induration of the edges of the wound began, and in a few days had involved their entire extent, and the surrounding tissues for some little

distance, and finally attaining the size of an almond, being at least twice the size of the chancre excised. Now all this looked very singular, as I had removed all the indurated tissue, and if constitutional syphilis already existed, no infection of the cut surfaces should have occurred. As I can see no other explanation, I believe that the infection took place through the medium of the blood which escaped from the chancre. It is certainly peculiar that the resulting chancre should be proportionate in extent to the cut surfaces, and of a similar shape. But one swallow does not make a summer, so we will have to accept the diction that syphilis is not auto-inoculable.

The course of syphilis in hetero-inoculation is interesting. When any secretion containing the syphilitic cells, such as discharge from a syphilitic chancre or mucous patch, or blood from a syphilitic subject, is inoculated upon a healthy individual, there may be a small pustule following, just as a fester may form from the prick of a clean lancet, but this only lasts a few days, and is generally absent, there being nothing to indicate the site of the inoculation unless perhaps a speck of dried blood, until after a period of from ten to forty days, when an indurated papule appears. This becomes ulcerated most likely, but may not do so; the neighboring lym-

phatics become enlarged, and general syphilis follows. In cases of vaccinal syphilis, or syphilis acquired accidentally in the operation of vaccination, a somewhat different course is followed. The incubation period of vaccinia expires first, the characteristic vesicle appearing and running its usual course. After a time, however, the vaccine vesicle becomes an ecthymatous ulcer with an indurated base, or induration appears and runs its course without ulceration. When a subject already syphilitic is vaccinated, we are likely to have a characteristic secondary syphilitic ulcer resulting, after the typical vaccinal vesicles have first formed. Such an instance recently occurred in one of my own patients, although he was under the influence of mercury at the time. A very important source of error with regard to vaccinal syphilis, and one which you should always bear in mind, is that the local and constitutional disturbance produced by vaccinia, is liable to develop latent syphilis, whether hereditary or acquired, and that the vaccinator will probably get the credit of having inoculated the disease. In such cases you will usually observe a more or less general eruption starting in the vicinity of the sore, instead of the typical period of incubation, followed by typical induration and after a variable interval, by glandular enlargement and general syphilis.

When the syphilitic poison is inoculated upon a number of raw surfaces simultaneously, or after a few days' interval, chancre appears usually at each point at about the same time. This is a valuable point in differential diagnosis, for chancre, unlike chancroid, is usually multiple from the beginning, or not at all, while chancroid may become multiple by auto-inoculation. A few apparent exceptions to this rule have been noted, and Wallace cites a case in which he succeeded in inoculating a man with syphilitic "virus," and producing a true chancre when the patient was already in the eruptive stage of the disease. Fournier estimates that about two per cent. of auto-inoculations of true chancre are successful, but presumably only when some inflammatory change in the sore exists. I have already expressed my belief that a greater proportion might be successful if performed sufficiently early in the course of the disease. The practical rule, however, is that auto-inoculation of true chancre, is not feasible, but may possibly succeed very early in the course of the disease. In the stage of sequelœ i. e., the so called "tertiary period" the secretion of chancre in another person may be inoculated, although rarely.

The consideration of the various secretions, physiological and pathological, capable of transmitting syphilis is very important, and they have been

quite exhaustively studied by different observers among the most thorough of which have been Bassereau, Diday, Rollet, Fournier and Clerc. These well-known investigators have arrived at practically the same conclusions. Inoculations with the secretion of chancre, mucous patches, any secondary cutaneous or mucous lesion capable of yielding a discharge, and of syphilitic blood have been made with entire success. Whether the blood is poisonous between the periods of active manifestations of the disease, has not been determined by experiment but from observations made upon vaccinal syphilis, it probably is inoculable, and I can see no logical reason why it should not be so, inasmuch as each successive crop of lesions is not due to new development of the syphilitic germinal cells, but to their renewed activity. The secretions of lesions not syphilitic, occurring upon a syphilitic subject, are not inoculable unless mixed with blood, e. g., the secretions of gonorrhœa and chancroid occurring in a syphilitic subject, produce only gonorrhœa and chancroid, unless there be an admixture of syphilitic blood. Diday inoculated pus from acne pustules, produced by the iodide of potassium on a syphilitic subject, but with negative results. It is also true that vaccine lymph derived from a syphilitic subject, is not capable of producing syphilis, unless it contains some of the patient's blood,

This should render us none the less cautious, however, for it is very easy for a small quantity of blood to become mixed with the lymph, and remain undetected. The vaccine scab, from a syphilitic patient, is always dangerous, as it invariably contains a certain proportion of dried blood in its composition. Inoculations with the secretions of tertiary lesions and with blood during the tertiary stage of syphilis are negative, although there have been apparent exceptions to this rule. Bumstead relates a case of inoculation of a surgeon's finger while operating upon a case of tertiary necrosis of the skull, and I may also cite the case of one of my personal friends who inoculated his finger while operating upon a rectal fistula in a patient suffering from tertiary syphilis. In due time a chancre appeared, and was followed by a well-marked development of secondary manifestations.*

The non-transmissibility of syphilis during the tertiary period of the disease is perhaps the strongest evidence in favor of the view that the lesions of this stage are not syphilitic at all, but are simply sequelæ. Patients suffering with tertiary manifestations, may procreate healthy children, but do

*The possibility of such cases as those cited, being illustrations of re-infection of subjects suffering from "sequelæ" of a previous attack, must be remembered, otherwise, they would seem to refute the "physiological pathology."

not always do so, and I think that in many cases in which the children are fairly healthy, and cannot be pronounced syphilitic, there will be some slight manifestations of hereditary taint, such as imperfect or irregular development of the teeth or those different manifestations of faulty nutrition which we are wont to accept as evidences of a strumous diathesis. Hutchinson's ideas regarding the efficacy of mercury and iodine in struma, have probably a basis quite different from the supposed "anti-strumous" action of these remedies. The term "attenuated syphilis," would be fitting for many cases of "scrofula." As a rule, however, we may accept the statement that tertiary syphilis is not transmissible. The later the period of the disease, the less the liability to transmission, and it is also probable that the male loses the power of transmission before the female. None of the physiological secretions, such as mucus, sweat, urine, milk, and semen are inoculable, unless they contain either syphilitic blood, or the secretion of a syphilitic lesion. The saliva, so often the medium of contagion, is innocuous unless mucous patches or other lesions exist in the mouth, in which case, it is contagious in the highest degree. The syphilitic cell (bacillus?) must be present, or no secretion, physiological or pathological, can transmit syphilis.

Lecture III.

Modes of conveying syphilis.—Constitutional syphilis always preceded by chancre, save when fœtus is infected by the mother, or vice versa.—Explanation of the occasional apparent escape of mother, when child is born syphilitic.—Escape of fœtus when the mother is infected after the seventh month of pregnancy —Impossibility of inoculation with syphilis when the epithelium is intact.—Mediate and immediate methods of transmission.—Danger of infection by kissing.—Danger of infection of nurses by syphilitic children, and vice versa.—Colles' law.—Example of infection of a number of persons by an hereditarily syphilitic child.—Transmission of syphilis by a healthy woman.—Illustrations of mediate transmission.—Number, location and duration of chancre.—Varieties of chancre.—Urethral chancre.—Complications of chancre.—"Mixed sores."—Transformation of chancre.—Treatment of chancre.—Syphilitic bubo.

Gentlemen:—At the conclusion of my last lecture, I had finished the consideration of the various secretions capable of transmitting syphilis, and this morning we will devote a few moments to the discussion of the various modes of transmission of the disease. As we have seen, the presence of the syphilitic cell is all that is necessary to render any secretion, whether physiological or pathological, extremely contagious, and in the absence of this cell no contagion can occur. Inasmuch as every morbid secretion due to syphilitic lesions, contains the syphilitic cell; and the lesions of syphilis are many and various, occurring in any situation, we can readily appreciate the fact that the opportunities for transmitting the disease, and the methods of its contraction are very numerous. The contag-

iousness of the blood of syphilitic subjects during the active period of the disease, affords an additional danger, as there are several ways in which it may be accidentally inoculated. The initial lesion of syphilis or chancre, may occur upon any portion of the human body, the only essential requisites for its production being a secretion containing the syphilitic cell, and a surface, integumentary or mucous, which has been deprived of its epithelium, and is consequently capable of absorption of extraneous matter.

In every method of transmission of syphilis, with the exception of two, the general disease is always preceded by a chancre, and its existence may be inferred, whether it has been detected or not. The circumstances in which a chancre is never present are, the infection of the child in utero, and the infection of the mother through the medium of the child. Under such circumstances, the syphilitic cells enter the blood current directly, and not through the medium of a localized process of proliferation, followed by a round-about tour of the lymphatics. Probably the same thing would occur if the syphilitic virus were injected directly into a large blood vessel. In case the father of the child is syphilitic, and the mother healthy, the child may escape infection, because the virus is temporarily inactive in the father; either spontaneously, or from

treatment, or the disease may be so far advanced in the stage of sequelæ that it ceases to be transmissible. Some authorities deny that the child can be infected by the father directly, claiming that such infection can only occur through the medium of the mother, but it seems to me that this view can hardly be correct, for syphilis is surely quite as capable of being transmitted in this manner, as are other morbid constitutional conditions. It may at least be transmitted as a dyscrasia, if nothing more, and I have seen instances apparently bearing out both this assertion, and the possibility of transmission of syphilis proper.* When the mother is syphilitic the child is invariably infected, unless a thorough course of treatment be instituted during the period of pregnancy, in which case it may possibly escape. Oftentimes, however, the children of syphilitic women may not develop the disease until late in life, thus leading to the supposition that they have escaped the disease. In such instances, the disease expends its violence upon the maternal organism, and probably acts in a manner somewhat analogous to vaccinia. When the mother is infected after the seventh month of pregnancy, the child usually escapes, a point in verification of

*Otis however, claims, and with reason, that the presence of the syphilitic cell, would inevitably prove fatal to the vitality of the spermatozoa, and that consequently the child cannot become infected, save through the maternal circulation.

the views of the pathology of syphilis which I have in part given you, and which we will shortly dilate upon rather more fully.

The second mode of contracting syphilis without the occurrence of a chancre, is the infection of the mother through the medium of the child. This too, is denied by many, but I believe it to occur, although I am willing to admit that the mother often apparently escapes the disease entirely or has very mild symptoms. In explanation of this fact also, we have the possible analogy of the fœtal infection, to vaccination, first suggested I believe by Hutchinson; syphilis in the mother being modified greatly, or entirely prevented by the infection of the child, in much the same manner that variola is modified or prevented by vaccination. The disease expends its violence upon the child in utero, thus rendering the subsequent infection of the mother com paratively mild, if indeed it occur at all.

I have stated that all that is necessary for the transmission of syphilis, is the contact of a secretion containing the syphilitic cell with an abraded surface. Now, in many instances, no abrasion is perceptible, but we infer that it must necesarily have existed, inasmuch as the poison cannot be absorbed by the unbroken epithelial surface. Whether the secretion containing the syphilitic virus may

remain in contact with a sound surface of mucous membrane, until maceration and removal of its epithelium with subsequent absorption occurs, is not positively known, but it is highly probable, and may undoubtedly occur in the case of secretion from a mixed sore, which is usually quite corrosive in character.

The methods of contagion in syphilis are classified as mediate, and immediate. By the mediate method we understand the transmission of the disease through the medium of infected drinking utensils, tobacco pipes, towels, etc. Chancroid is very rarely transmitted in this way, but syphilis is quite often so transmitted on account of the multiplicity of its lesions, which are apparently so insignificant sometimes, but none the less infectious. By the immediate method of contagion we mean the direct contact of an abraded surface in a healthy person, with a syphilitic lesion, or syphilitic blood from a non-syphilitic lesion in a syphilitic subject. The type of this mode of contagion, is of course, infection during sexual intercourse, but it may be contracted in many other ways; quite often it is contracted by the physician or surgeon, in operating upon or examining syphilitic subjects. Some of our prominent obstetricians and gynæcologists have had sad experiences in this respect. Chancre

is sometimes contracted in kissing, a little mucous patch upon the lips or tongue of the diseased person inoculating any slight fissure or abrasion upon the lips of the healthy subject. I have known of very sad examples of this method of contagion. A short time since, I treated a young married man for chancre of the tongue contracted in this manner, and I have seen several probably innocent women with labial chancre. Infants may contract syphilitic chancre from the nipples of syphilitic nurses, and on the other hand, a healthy nurse may contract chancre of the nipple, from a syphilitic infant. Colles' law, so-called, that a hereditarily syphilitic infant, cannot infect its mother, depends simply upon the fact that in many cases the mother already has, or has had syphilis, or as already suggested, the possible analogy to vaccinia may explain it, the syphilization of the infant having afforded immunity for the mother. For my own part, I have strong doubts as to the potency of this so-called law of Abram Colles, and hold to the opinion that a syphilitic infant should never be nursed by an apparently healthy mother. My views upon this subject will be presented hereafter.

As an illustration of the danger of immediate contagion, in case one member of a family should contract syphilis, I will mention an instance which

I reported in the N. Y. Medical Record a few months ago: A young married man contracted syphilis, and communicated it to his wife, who was then in the seventh month of pregnancy. The child was born apparently healthy, and remained so up to the age of three years, when it died of some acute disease of the lungs, not supposed to be of a syphilitic character. A second child was born sixteen months later, which was unequivocally syphilitic. From this child, its grandmother and one aunt, contracted chancre of the mouth, and the grandmother subsequently infected the grandfather, after which the disease was diagnosed by the family physician. Thus from the indiscretion of one member of the family, five innocent persons were infected with syphilis. The fact that the first child apparently escaped, is important as bearing out the assertion of Diday, that in case the mother is infected after the seventh month of utero-gestation, the fœtus escapes the disease.

There are many interesting examples of the mediate method of contracting syphilis. Instances have been known in which a man with a long prepuce, has had intercourse with a syphilitic female, and shortly afterward with his wife, infecting the latter, while he himself escaped the disease, the virus, having been retained beneath the prepuce and

subsequently deposited in the healthy vagina. Again, the syphilitic poison may be deposited in the vagina of a female, by her lover, and her husband, embracing her shortly afterward, receives the souvenir the lover left him, while the woman herself escapes. These facts must be borne in mind, for they may be of service to you hereafter. Tobacco pipes, drinking utensils, and the tubes used by glass-blowers, are familiar media of syphilitic contagion. There is an instance related, in which a whole glass-blowing establishment became infected by the blow pipe, as it was passed from mouth to mouth. In this case, one of the workmen had a few small mucous patches in his mouth, and from this man, the whole party contracted syphilis. Vaccination is also a familiar mode of contagion, less frequently however, than is generally supposed, for if the meanness of generations past, should happen to manifest itself at the time of the vaccination, particularly if humanized virus is used, the trouble is invariably laid at the door of the doctor. An interesting instance of the wide dissemination of syphilis by mediate transmission is that in which an entire community was infected by an itinerant tattoo artist, who used his own saliva in mixing his inks. The usual explanation of mucous patches in the mouth, holds true in this case.

The duration of syphilitic chancre is variable. It may last for a couple of weeks, and in the majority of cases, an eruption appears prior to the disappearance of the chancre. Chancre is generally single, but may be multiple, according to the number of points primarily inoculated. It is usually situated upon the genitals, and particularly behind the corona glandis in the male, but its situation may vary greatly, as may be readily seen upon considering its numerous methods of contagion. Chancres of the face, tongue and nipple are not so very rare, and instances of chancre of the tonsil have been reported. Urethral chancre is not uncommonly seen.

I have already described to you, the various forms of induration of chancre, but a further description of the sore, particularly of the ulceration, may be of service. A chancre may consist of (1) An erosion, (2) An ulceration, (3) A deep funnel-shaped ulceration or (4) of a dry indurated papule.* (1) Erosion is said to include about two-thirds of chancres, and is usually situated upon mucous membrane, very often inside the prepuce. In shape it is oval or perhaps a trifle irregular, with a raw, polished surface of a wine red color, and sometimes a pultaceous base, but usually secreting a simple

*Vide Vanburen and Keyes, "Genito-Urinary Diseases with Syphilis."

thin, sanious fluid, devoid of pus, or at least containing a very small amount of pus corpucles. These erosions are flat and may surmount a thin parchment induration, or may cap a hard lump as large as a marble. (2) Superficial ulceration with sloping edges is found with the parchment, or most often with the split pea induration. (3) When this ulceration caps a large mass of induration, it is likely to be quite deep and funnel-shaped, constituting the so called "Hunterian chancre." The secretion from a chancrous ulceration, is quite likely to be of a sero-purulent character. (4) The indurated papule, is usually seen upon the skin, or upon the integument of the penis, or even upon the prepuce when it is short and dry. Ulceration of this form of induration might occur, if it were kept moist, the conditions of warmth, moisture and irritation combined, being especially favorable to the production of ulceration. I think that the parts upon which it develops, are not so rich in lymphatic spaces as those tissues in which a chancre is more likely to ulcerate, the collection of cells being consequently smaller, and the tendency to necrobiosis less marked.

The symptoms of urethral chancre when too deep to be seen, consist in a discharge coming on after the usual period of incubation, this discharge

being thin, and perhaps sanious, but sometimes creamy and thick, and a painful spot in the urethra, which is especially noticeable during micturition and erection, with possibly a lump in the course of the canal, which is plainly perceptible on palpation with the thumb and finger, in some cases. By means of the endoscope, an ulcer may be detected, and in a short time the general enlargement of the glands and other symptoms, clear up the diagnosis.

There are some complications of syphilitic chancre that are worthy of attention: 1st. First and simplest we have vegetations or warty growths—the so-called venereal warts, which result from local irritation, in combination with heat and moisture, and are identical with those occurring under other circumstances. Proper measures of cleanliness will prevent their formation, but if they appear in uncleanly persons, caustics or the scissors are necessary for their removal. 2d. Inflammation of chancre sometimes occurs, giving rise to considerable pain and profuse purulent secretion. 3d. Chancre may be complicated by chancroid, constituting a "mixed sore," unless the two forms of disease appear in different localities. When a chancre becomes inoculated with chancroid, its ulceration deepens, and it gradually assumes the general characters of chancroid, but unless phag-

edæna occurs, induration still persists. When chancroid develops primarily, it runs its usual course, until the incubation period of syphilis has elapsed, when induration occurs. The secretion of the "mixed sore," is auto-inoculable, and is capable of transmitting either disease alone, or both together, to a healthy person. In some cases chancroid appears and rapidly heals, or the incubation period of syphilis is long, and we have induration developing in the cicatrix of the chancroid, after it has perfectly healed. The test for mixed chancre is auto-inoculation: *Any indurated sore, the secretion of which is auto-inoculable, in the true sense of the word, and which is followed by constitutional syphilis, is a "mixed chancre." When we use the term "auto-inoculable" we mean a sore, the secretion of which, inoculated in a new situation in the diseased individual, will produce chancroid.* The methods of contraction of mixed chancre are two, viz: Both poisons may be contracted simultaneously, or either form of sore may develop primarily, and subsequently become inoculated with the other form of disease.

Typical syphilitic chancre, may undergo marked transformations, e. g. a chancrous induration, particularly when situated in a moist locality, may lose its hardness, and at the same time become trans-

formed into a mucous patch, by becoming covered with a characteristic whitish pellicle. In some instances the sore acquires the form of the mucous patch, and nevertheless retains its characteristic induration. Phagedæna may attack a true chancre, and when it does so, is quite likely to be of the gangrenous form. The pultaceous and serpiginous varieties, are quite rarely seen under such circumstances. After phagedæna has once invaded a chancre, induration is no longer perceptible. If the sore be of the mixed variety, we are then quite likely to have the pultaceous or serpiginous form of phagedæna. Such authorities as Bassereau and Diday think that the type of syphilis following phagedænic chancre is apt to be exceptionally severe. This is explicable by considering the fact that phagedæna is due to general debility, or a peculiar diathesis, which lessens the resisting power to any disease, and especially to syphilis, rather than by any extraordinary intensity of the syphilitic infection.

The treatment of syphilitic chancre is very simple, when no complications exist. The yellow or black wash may be applied, and constitute the best applications that can be used. According to the new pharmacopœa, the lotio flava or yellow wash, consists of 18 grains of the bichloride of mer-

cury to 10 ounces of liq. calcis, and the lotio nigra or black wash, of 30 grains of calomel to 10 ounces of liq. calcis. These preparations should be well shaken before being used, or very little of the salt of mercury, which exists in the form of a precipitate, will be applied. The mild chloride of mercury with zinc oxide, forms a very efficient dressing. Cauterization of simple hard chancre should never be practiced, as it will simply cause painful inflammation in an otherwise insignificant lesion. If, however, the sore is of the mixed variety, its chancroidal property should be destroyed by cauterization, after which iodoform in powder should be applied. All sources of irritation should be carefully avoided, and perfect cleanliness insisted upon. When phagedæna occurs, mercury is essential to counteract the debilitating influence of the constitutional poison, and for my own part I believe that the internal administration of mercury should be begun, as soon as the diagnosis of syphilitic chancre is perfectly clear, and by following this course, I very seldom see any manifestations of the disease other than a slight roseola, with perhaps a few trifling mucous patches, during the entire course of treatment. It is very essential to prevent eruptions, upon the face especially. Whenever, on the other hand, there is the slightest doubt as to the correct-

ness of the diagnosis, no mercury should be given, until the question is decided by the appearance of symptoms unequivocally syphilitic.

We have already noted the glandular enlargements that succeed the appearance of the syphilitic chancre. These are sometimes termed "syphilitic bubo." It may occur in any situation where there are lymphatic glands in the vicinity of a chancre, being naturally most often found in the groin. The groups of glands involved, vary according to the location of the chancre. In chancre of the penis, uretha, groin, buttocks, anus, lower part of the abdomen, scrotum, thighs, or rectum, the inguinal or femoral glands, or both, are involved. In chancre of the lips and mouth, the submaxillary lymphatics, and in chancre of the face, the pre-aural gland are involved. When the finger is inoculated, we have enlargement of the glands in the axilla. General glandular enlargement eventually occurs, but the changes are first evident in the contiguous glands, and they are always more markedly enlarged than any of the others. When the inguinal glands are implicated, they are grouped in a peculiar fashion. This group, termed by Ricord, the "pleiad," consists usually of one large gland, surrounded by from two or three, to six or eight of smaller size. The enlargement is generally not

very great, but is peculiar in some respects. There is little or no pain or tenderness, and the glands are freely movable under the skin, being distinctly outlined and not matted together. As a rule they have the hard, woody feel of the chancre, but exceptionally they are softer and more elastic. Enlargement of the glands begins usually about the second week after the appearance of the chancre, and Fournier remarks a case in which enlargement did not occur until the twenty-seventh day, as unique. Instead of the peculiar group known as the pleiad, we may have a single moderately enlarged gland, or perhaps an enormously swollen gland as large as a hen's egg, on one or both sides. Such enlargements have been carefully studied by Bassereau, and found to consist of small glands, matted together with enlarged lymphatic vessels and firm connective tissue.

The important practical point, to which I desire to call your attention in connection with syphilitic bubo, is that each indurated gland is but a repetition of the neoplastic formations of which the chancre is the prototype. It is hard, and woody, comparatively painless, perfectly circumscribed, and not prone to suppuration, and all because of those same characteristic microscopical features, which we have studied in the chancre. Under the

microscope, we have the same collection of cells of several forms, the large, round, multi-nucleated granular cell being in the preponderance, and the same proliferation of the surrounding connective tissue, that we see in a section of a hard chancre.

Syphilitic bubo attains its full development in from one to three weeks, and may then remain stationary for some weeks or months, or perhaps it may last for over a year. It is usually present, and may suddenly increase in size when the early eruptions appear, but in exceptional instances, it may speedily disappear from unknown causes. Suppuration rarely attacks syphilitic bubo, and when it does occur, it is the result of inflammatory irritation or of a strumous diathesis, and its pus is not auto-inoculable. *When pus from a bubo is auto-inoculable, the primary sore must necessarily have been either a mixed sore, or pure chancroid.* Induration of the lymphatics is so rarely absent in syphilitic chancre that practically it may be said to always exist. It is likely to be absent in cases of second infection, and according to Ricord, is not present in phagedænic chancre. I have myself seen several cases of phagedænic sloughing in hard chancre, in which bubo did not appear, although general adenopathy developed in connection with the general symptoms. I can offer no explanation

for this, and must confess that it does not enhance the strength of the position which I have assumed as to the pathology of the disease, and in which I have adopted the views of Otis. Such cases would naturally bring up a question to which I have already alluded, viz: Whether there may not be two elements in syphilization, one local, and the other constitutional. In cases in which there is considerable subcutaneous fat, bubo may not be perceptible. As a rule syphilitic buboes gradually attain their maximum development, and as gradually disappear, either spontaneously, or as the effect of administration of mercury, in the same manner as the chancre itself eventually resolves. Although as I have stated, they rarely suppurate, these glandular enlargements are prone to caseous degeneration, when the subject is of a strumous diathesis. Virulent suppuration may, of course, ensue in cases of mixed sore, or if the sore however innocent in appearance at its commencement, should subsequently become irritated and inflamed. In the former case, the pus is auto-inoculable, but in the latter it is not.

The treatment of syphilitic bubo is that of general syphilis, unless suppuration occurs, in which case it must be treated upon ordinary surgical principles. As I shall be unable to give you a

special lecture upon the treatment of bubo, I should be pleased to have you refer to an article in the *Chicago Journal and Examiner*, in which I have presented my views upon the subject.* We leave the subject of syphilis at this point this morning, gentlemen, and in my next lecture I will endeavor to give you an idea of the pathology of "general syphilitic infection."

* Vide Chicago Journal and Examiner, May, 1883.

Lecture IV.

General infection.—Importance of a knowledge of the site of the primary lesion.—Universal susceptibility of the tissues to the syphilitic process.—Termination of the initiatory period and commencement of general infection.—Progression of the syphilitic cells.—The periods of quiescence not true periods of incubation.—Explanation of the apparent periods of incubation.—First manifestation of constitutional disease.—The roseola.—Occasional coincidence of febrile and other symptoms with the roseola.—The roseola not due to proliferation of cells.—The so-called "syphilitic fever."—Explanation of syphilitic sore throat.—The syphilitic papule.—Structure of papule and explanation of its occurrence.—Syphilitic alopecia and onychia.—Cause of ulceration and suppuration of papule.—Mucous patches, tubercles, and condylomata.—Causes and structure of the "plaques muqueuse."—Syphilitic iritis.—Osseous lesions of active period.—Duration of the active period of syphilis.

Gentlemen:—We now come to the interesting topic of "general syphilis" or the "period of general infection and subsequent localized cell accumulation".* The period covering the development of the chancre with its attendant and consecutive lymphitis and adenitis, which we have termed the initiatory period, or if we may use the expression "local syphilis," is also and more frequently known as "primary syphilis." Inherited syphilis has no primary period, being general from its very commencement, but *acquired syphilis has always a primary stage.* This is of great practical importance, for wherever we meet secondary syphilis, we can positively affirm that *there must necessarily have been a chancre somewhere, and this must have*

*Vide Otis.

been attended by adenitis, however obscure or slight the symptoms may have been. Now it is sometimes very important to decide *where* these local changes were manifest. Only a few months ago, I was consulted in regard to a young lady suffering with active secondary syphilis, the origin of which she professed to be entirely ignorant of. Her relatives seemingly had no suspicion as to the possible source of her trouble, and she was brought to me by the gentleman to whom she was engaged to be married. This gentleman had his own suspicions, but generously gave the woman the benefit of a doubt existing in his own mind, as to the possibility of her having contracted some simple disease by kissing, he himself having a sore mouth at the time. A careful investigation revealed the fact that she had never had the slightest trouble with her mouth or throat, until the late secondary pharyngeal manifestations for which she consulted me, appeared, and in addition, she innocently stated that she had had about a year previous to her consulting me, some little "tender lumps" in the groins. There had never been any "kernels" as she termed them in the neck beneath the jaws. These points settled the question as to the locality primarily affected, and a candid statement of the case saved the young man a mesalliance. The

woman is probably congratulating herself upon her success in duping me, but wondering at the disappearance of her affianced, he having withdrawn in the easiest manner possible by leaving the city.

The initiatory period of syphilis terminates, when the diseased cells have traversed the lymphatics leading from the chancrous surface, have entered the receptaculum chyli and from thence passed into the blood, through the medium of which they are disseminated throughout the system, giving rise to the peculiar changes characteristic of syphilis, in every tissue and organ in the body; the changes being more marked in some organs perhaps than in others, in different cases, but there being no tissue of the body which enjoys complete immunity from the ravages of the disease. The various bodily functions may be impaired, the special senses and sexual appetite destroyed, paralyses may occur, and even the intellect itself may be ruined by this terrible malady.

I will now direct your attention to the pathology of the various manifestations of the period of "general syphilitic infection." We have seen that the period of local manifestations of syphilis is preceded by a period of incubation, lasting on an average twenty-one days. Following the initiatory

period we have another apparent period of incubation, lasting on an average forty to forty-five days, and followed by general syphilis. Now, gentlemen, it would appear that these periods of quiescence are not true periods of incubation, but are periods during which there is "an interference with the progress of the diseased cells by normal anatomical and physiological barriers." During the second stage of incubation so-called, (this stage we will shortly subdivide into several apparent incubative periods) which as we have seen, lasts on an average forty to forty-five days, the syphilitic germinal cells are slowly traversing the lymphatics, and gradually making their way to the general blood current.* *They are not fermenting, and thus preparing for an explosion, but are slowly traveling on through the lymphatic system, proliferating and multiplying by the way, and not only changing themselves, but exciting propensities for evil in the lymphatic and connective tissue elements with which they come in contact, and to which they impart their own infectious and other morbid properties, particularly their morbid activity and abnormal tendency to proliferation.*

Generally we have only the chain of glands intervening between the local induration, and the lymphatic reservoir or receptaculum chyli, indura-

*Otis insists upon this point with especial emphasis.

ted until just before, or at the time of the manifestations of general syphilis, sometimes, however, the general lymphatic system is involved prior to the appearance of the eruption, and there is an undoubted increase in size, coincident with the eruption. Now why is it that we have an interval between the appearance of the local induration, and the enlargement of the nearest lymphatic glands, another between this glandular enlargement and general glandular hyperplasia, and still another sometimes, between the general glandular enlargement and the appearance of the first eruption? I think that very good reasons can be given for their occurrence: In the first place, a certain length of time must elapse before the diseased cells can leave the original focus of infection, viz. the chancre, traverse the intervening lymphatic vessels, and arrive in the nearest lymphatic glands; here the cells produce that characteristic effects as evidenced by the development of syphilitic bubo, and while the glands become enlarged, the cells which have excited the morbid changes, with others which have joined them and become infected by the way, travel slowly on toward the receptaculum chyli, and thence to the general system by way of general circulation. This requires a certain interval of time, for no

morbid manifestations can occur until the cells have reached their destination. Thus we have an explanation of the second apparent period of incubation which has been named.

As we have seen, the syphilitic germinal cells eventually arrive at the receptaculum chyli, from which they are carried to the general circulation, and after entering the right heart, are finally disseminated throughout the tissues generally, producing their characteristic effects, a first evidence of which may consist in a general glandular enlargement sometimes seen prior to the eruption. In cases in which the glands react prior to the appearance of an eruption;—the possibility of this is denied by some, good authorities claiming that glandular enlargement is always coincident with, or consecutive to the eruption; my own experience is that they often become enlarged prior to the eruption.—there is a consequent interval between general adenitis and the syphilitic eruption. This is due to the fact that, although the diseased cells arrive in other tissues of the body through the medium of the blood, quite as soon as in the lymphatics, the latter are likely to be the first tissues to respond to the morbid influence exerted by the cells. To be sure the glands usually respond rather tardily, and are not perceptibly enlarged until the eruption

appears, but in my estimation many cases are exceptions to this rule. If the lymphatic glands are already enlarged when the eruption appears, they immediately still further increase in size, the proliferation of cells being excited to renewed activity at this time. We have thus, it seems, explained the reasons for the three apparent periods of incubation, and have endeavored to demonstrate the fact that they are not true periods of incubation or quiescence at all, but are periods during which the cells are still slowly marching on, and which are necessary, in order that the cells may reach the tissues which are successively involved.

The first period of incubation occurring in the natural course of syphilis, I have not yet touched upon, but we will now analyze it, and see if we cannot explain it in a manner somewhat similar to that involved in the explanations just given for the other periods of quiescence. This first period of incubation, is the most important of all the so-called incubative periods, and as I shall endeavor to show you, is like the others, in that it is apparent and not real. Now the question may arise, in the minds of even those among you who are perfectly willing to accept the statements as to the other stages of quiescence being apparent and not real, as to whether this first period, which intervenes be-

tween the occurrence of inoculation with intectious material, and the appearance of the initial induration, is not a stage of true incubation. Such a question would be but natural, for it would certainly appear from the long stage of quiescence, that the virus of syphilis was undergoing a sort of development or fermentive change, at the culmination of which an explosion naturally followed, in the form of a chancre. Now it is my own belief, as formed from a careful survey of the investigations and teachings of Besiadecki, Baümler, Otis and others, that *local changes begin as soon as the syphilitic virus has been absorbed.* These changes are very gradual, it is true, and probably consist at first, of the incorporation of the syphilitic germinal cell* (which as we have seen is a degraded cell, and may be of a diameter of only 1-100,000 of an inch), with the lymphatic elements of the infected tissues. A certain length of time is necessary, before the degraded syphilitic cells reach the lymph spaces, and again, some little time is necessary for their incorporation with the lymph cells.

We now have a slow proliferation of the lymphatic elements, which are now syphilitic germinal cells, and possessed of new properties which are morbid, as well as an intensification of their physiological properties. The chief new and morbid

*Or bacillus of Lustgarten, if proven.

property which they have acquired, is that of infectiousness, and those normal properties already existing but which now become intensified, are those of amæboid activity, and power of proliferation. The multiplication of cells becomes more active, the connective tissue elements of the blood-vessels and lymphatic walls become involved, producing as we have already seen, partial occlusion of thuir lumen, and a consequent "anæmia of tissue." The smaller lymphatic vessels are now reached, and the accumulation of cells is so extensive that a preceptible induration is noticed. This area of induration increases in size until the cell accumulation of which it is composed, has free communication with the larger lymphatics, and the smaller lymphatics regain their permeability. From this time on, the cells are removed by the lymphatics as fast as they are formed. Finally, local proliferation having entirely ceased, the cells composing the induration are entirely removed by the absorbents, or undergo fatty degeneration and resolution from the administration of mercury or the iodide of potassium.

You will notice, gentlemen, that including the primary stage of quiescence, I have described four apparent stages of incubation, while ordinarily there are described but two, one of which precedes

the development of the chancre, and is termed a period of true incubation, and the other deemed by some a true, and by others an apparent period of incubation, intervening between the primary and secondary syphilitic manifestations. I think, however, that on careful consideration, the stages, or rather intervals which I have described, will be sufficiently plain.

At the end of about forty to forty-five days on the average, after the development of the initial lesion, the period of "general systemic infection and localized cell accumulation" begins, the cells having now reached their final destination.* The first evidence of the general infection, consists in the development of a peculiar eruption of rose colored spots, termed the syphilitic roseola. Although this eruption may escape observation, it is probably constant, being always present in a greater or less degree; in some cases lasting for a number of weeks, probably from two to eight, while in others it may last only a few hours. In its general appearance, this eruption is not very unlike the eruption of measles. The spots are of a dull rose red hue and disappear on pressure, when recent, but later on, leaving a coppery stain. Violent exercise, as in running or dancing, is liable to hasten or determine the eruption, as is the case

*Vide Otis "Class room lessons in Syphilis."

with simple roseola. There is usually no pain or other premonitory symptom with this eruption, although such symptoms as a facial neuralgia, or severe pain in the chest may be observed, and in some cases general malaise, headache, and febrile movement, may occur; these symptoms being supposed by some, to be constant, and hence termed "the syphilitic fever." I have had recently a case in which severe facial neuralgia attended the roseola, and another in which all the subjective symptoms of an impending pneumonia were present, the thoracic pain being especially severe, and these symptoms being followed by the finest kind of a roseola the next morning; as will be seen hereafter, however, I believe these symptoms to have been merely coincidental. Sometimes the eruption consists of but a few pale spots, while in others it is generally well marked, being occasionally slightly elevated.

Now, the general idea prevails that the syphilitic roseola is the result of local changes in the skin, produced by the syphilitic poison, and reasoning *a priori* from the line of argument which I have myself given you, you might be led to the conclusion that it is due to a localized cell accumulation, the product of which, collecting in the skin itself, constitutes the exanthem. This is not the case, how-

ever, and it is the only instance of the kind, throughout the course of syphilis. The syphilitic roseola is due to dilatation of the capillaries, with subsequent stasis, and the exudation of leucocytes and red blood corpuscles into the implicated integumentary area.* *The greater the degree of stasis, the larger the number of extravasated red corpuscles, and inasmuch as it is due to the changes in the blood pigment that staining of the tissues occurs, the greater the number of blood corpuscles extravasated, the deeper and more persistent this staining is likely to be.* We find a similar staining in any lesion, specific or simple, in which there exists long continued congestion. This is illustrated by the changes in the tissues resulting from non-syphilitic ulcers of the leg. Now it next remains to consider the origin of this capillary dilatation, and inasmuch as the contractility of the blood vessels is presided over by the sympathetic system, or more properly, by the vaso-motor system of the sympathetic, it is evident that vascular dilatation in syphilis must be due to some peculiar influence wrought upon the sympathetic system, by the syphilitic cells, which causes a suspension of the contractile power of the vascular walls, and leads to dilatation and stasis at the periphery. That the calibre of the capillaries depends upon nervous currents from the

*Baümler.

sympathetic, is illustrated by the familiar physiological demonstration, of section of the cervical sympathetic, which gives rise to reddening and turgescence of the ear of the rabbit, as well as various nutritive changes in the cornea of the eye, etc. It is possible that the dilatation and stasis is a reflex phenomenon, and due to the reflected local irritation produced by the syphilitic cells, but such an explanation is hardly as rational as that involving a direct influence upon the sympathetic centres, analogous to that produced by various drugs, such as quinine, belladonna and others, and to that produced by emotional disturbances.

I have said something in reference to the so-called syphilitic fever, but will say a few words more upon that subject. Among the prodromata which may be observed prior to the development of the roseola, are malaise, headache, rheumatoid pains, anorexia, nausea, prostration, sleeplessness, and nervous irritability, and in some cases quite sharp febrile movement, followed perhaps by perspiration. These are the symptoms several or all of which may be included under the head of "syphilitic fever" or as Diday more correctly terms them "syphilitic prodromes." On reviewing the list of single symptoms which may occur, it will be evident that they may be dependent upon so many

and various coincident disturbances, that there can be no great constancy or certainty about their occurrence in syphilis, and that the term "syphilitic fever" is consequently inaccurate. M. Ricord denies its relation to syphilis, and claims that in every case, it can be traced to causes independent of the roseola. Otis endorses this view, and from my own personal experience I am inclined to agree with it, for I have found that febrile disturbance is exceptional, and that in my own practice my patients usually discover the roseola entirely by accident, or in their daily examination of the surface of the body, and but rarely have the slightest constitutional disturbance. Very often the roseola escapes the patient's observation until I direct his attention to it, and then he usually is much astonished that he should feel perfectly well, with such a prominent eruption. With this roseola or shortly after it, in cases in which it has not occurred prior to the appearance of the eruption, general enlargement of the lymphatic glands occurs, the cells at this time not only having reached the general lymphatic system, which is extremely susceptible to their morbific influence, but being moreover unusually active.

Just about the time the roseola appears, sometimes shortly before or after it, we have the devel-

opment of an inflammatory engorgement of the tonsils, pharynx, and soft palate, involving usually the whole faucial surface. Now, we must seek for an explanation of this localization of the morbid effects of syphilis, in the throat, and a simple one is easily found. According to Frey, His, Recklinghausen and Teichmann, the tonsil is a part of the general lymphatic system, representing the simplest form of lymphatic gland. There is no direct communication between the tonsillar follicles and the adjacent lymphatic vessels, but each follicle is seen to be invested with an exceedingly dense network of fine lymphatic vessels, which are dilated in a peculiar fashion and cover in the follicle so completely, that but one small portion of its surface is free, this being directed towards the mucous membrane. The entire pharynx is exceedingly rich in lymphatics, hence we might quite naturally expect morbid changes in its structures, simultaneously with those occurring in the general lymphatic system. This arrangement of the lymphatics also explains another phenomenon, viz., the occurrence of those severe and often seriously destructive ulcerations, which occur in this situation in late syphilis. These lymphatics are brought into much more intimate relations with the contiguous blood vessels, than are the lymphatics of a higher order,

and are hence prone to true inflammation, and profound nutritive disturbances, whenever they become crowded with the syphilitic cells.

The next thing observable after the roseola, in the natural course of syphilis, is the development of an eruption of true papules. This may appear when a roseola has not been noticed, or may even be coincident with it, but generally follows it after a variable interval, often some weeks or months. The papules are usually most prominent about the borders of the hair upon the forehead, forming a peculiar appearance termed the "corona veneris," or venereal crown, but may be scantily scattered over the breast, back, and limbs. In still other instances they may be thickly studded all over the body. This eruption lasts longer than the roseola, occasionally remaining prominent for a number of months. It is at first of a tolerably bright reddish hue, but this gradually fades, leaving the characteristic ham color. The papules tend to exfoliate epithelial scales, especially at their bases, forming a peculiar appearance known as the collarette of Biette, a sign which is supposed by some to be pathognomonic of syphilis. It is undoubtedly characteristic when present, but unfortunately it is oftener absent. This shedding of epithelial cells around the base of the papule of syphilis, is simply

due to innutrition of the epithelial elements about the base of the papule, produced by the morbid cells within it. This process is precisely like that which causes loss of tissue in the initial lesion, viz. *necrobiosis or anæmia of tissue, from the pressure of abnormal cell infiltration.*

We will now examine the syphilitic papule more minutely: According to Kohn, the papule is composed of a dense, circumscribed, cellular infiltration into the papillæ and corium. This accumulation of cells is piled up in dense and regular layers around the vessels, and in the meshes of the connective tissue. These cells do not become permanently organized, but tend to undergo granular and fatty degeneration, and finally disappear entirely, the detritus produced by their retrograde metamorphosis, being removed by the absorbents, to be eliminated by the various emunctories. Or, the cells may become heaped together in large amount, and form pus. On section of the papule, we find two lines of cells in the corium and papillary layer of the derma, which layers are glued together quite firmly, the epidermis being tightly stretched over them. The hardness of the papule is due to the density and dryness of the accumulated cells, and its color to capillary stasis, to any effusion of coloring matter from the blood vessels,

and possibly, to the color of the neoplasm itself. You will observe gentlemen, that the structure of a secondary papule, is essentially that of the initial lesion and the primary glandular infiltrations. Now, it remains to explain the cause of this circumscribed collection of cells, or the syphilitic papule.

We have already stated that the initial lesion is due to an accumulation of cells, which results from a morbid impulse given to the normal leucocytes by the degraded syphilitic cell, and it would seem a very logical inference that we have here in the papule a similar process, and such is in fact the case. But why is it that these cell accumulations occur in the papillæ and cutis rather than in other situations? By reviewing our anatomy and physiology a little, we will be able to explain it. The blood containing the nutrient pabulum upon which the repair of the tissues depends, is distributed to the various tissues of the body by the arteries, and returns, loaded with the products of retrograde tissue metamorphosis by way of the veins. There must of necessity be a certain amount of nutritive or germinal material taken to the tissues, over and above the quantity necessary for their repair, and there must be some physiological means of restoring this to the blood. Such an arrangement does

in fact exist, and we have interposed between the arterial and venous systems, a system of fine vessels termed lymphatics, the function of which is to collect all surplus germinal material, and return it to the circulation. The nearest points of contact of the arterial, venous and lymphatic vessels are at the superficies, or the periphery of the body, where the capillaries of the general circulatory and lymphatic systems are in most intimate contact, and as it is here that the vessels are smallest, it is naturally in this situation that retardation of the circulation is most likely to occur, or an interference with the interchange of nutritive materials, result from exciting causes of various kinds. It is here, therefore, that we should expect to find collections of surplus germinal material which from any cause had been forced to accumulate in the tissues, and failed to find an entrance into the lymphatics. Such is really the case. You are probably somewhat familiar with the structure of the papillæ of the cutis, and are aware that each one contains capillary lymphatic and blood vessels. According to V. Rindfleish, Teichmann, and others, the lymphatic plexus lies in the centre of the papilla, while the capillary blood vessels, wind corkscrew fashion around it until they reach the apex. Teichmann, in particular, has called attention to this peculiar

arrangement. These vessels vary in size from time to time, and vary according to the degree of vascular or blood pressure. *It is in the spaces between these capillary loops and the central lymphatics, that the accumulation of cells in the syphilitic papule takes place.* An extra number of cells is brought to the part, and in addition, there is an increased local proliferation which temporarily blocks up the lymphatics, or overcomes their power to dispose of surplus germinal material, and as a result, we have a heaping up of cells, with all those attendant morbid phenomena which we have seen in the initial lesion. Sometimes the papules are very fine, but they may become large, sometimes by fusion, or may involve sebaceous and sudariparous glands,—which have no lymphatics,—simply by matting them into the general infiltration of a number of papillæ. As a result of this same cell process, we may have at any time during the period of general syphilis, usually during the early months of the secondary period, often co-existent with the papular eruption, falling of the hair, or alopecia. This results from a derangement of nutrition, produced by a cellular infiltration of the hair follicles. As a result of spontaneous, or therapeutically induced fatty degeneration, this cell accumulation may be removed, and the hair again grow. The nails of the

fingers and toes may become affected by this same cellular infiltration, and become brittle and lustreless, or from very great infiltration and consequent nutritive disturbances, the destructive lesion known as syphilitic onychia may occur. I have already stated that pustules or vesicles, may form during the papular stage of syphilis. Ulcerations resembling tertiary or late secondary lesions may also occur. These changes apparently result from a lack of formative power in the lymph, or a tendency to liquefaction of the hyperplasic materials, due to constitutional debility or lack of tone.

There are several peculiar lesions occurring during the period of general syphilis which are both important and interesting, but which are really mere modifications of the syphilitic papule dependent mainly upon the situation and surroundings of the lesion. Mucous patches which appear upon the various mucous surfaces or quasi mucous surfaces, where they are constantly subjected to irritation from friction, and to heat and moisture, are examples. These lesions are elevated plaques of a milky or grayish color, covered with a grayish exudate, and are not greatly unlike the primary superficial erosion sometimes seen upon the genitals. When situated about the anus, upon the scrotum, vulva, or between the digits, these

"plaques muqueuse" tend to become hypertrophied, forming broad papules or excrescences more or less elevated, sometimes covered with a sort of diphtheritic deposit, and usually secreting a foul-smelling serous secretion. These modified mucous patches are termed mucous tubercles, or condylomata. The existence of local irritation often determines the development of mucous patches, as is seen in the mouth, from the contact of a pipe stem, or from irritation of the mucous membrane of the mouth or tongue by a broken tooth. Tobacco smoke from either pipe or cigars, and tobacco juice, will also produce these patches, and it will be found much easier to prevent them by removing sources of local irritation, than to remove them when once they have formed.

During this period we often have ocular troubles, which may prove of very serious import. An infiltration of cells into the iris and ciliary body often sets up an iritis at this time, this inflammation being really in no way distinguishable from that produced in the same situation by rheumatism, trauma or other exciting causes. There is perhaps a greater tendency to chronicity and plastic exudate, with the formation of adhesions or synechiæ, and the iris is possibly a trifle more cloudy and infiltrated than in the simple forms of iritis, but

the differences if any exist, are too slight as a general rule to be of very great practical importance from a diagnostic stand-point. The local accumulation of cells in these cases, sometimes forms a distinct nodule or tumor often termed the "gummy tumor of the iris," but which is in no wise different in structure from the syphilitic papule. It is especially apt to occur in late syphilis. Similar plastic nodules may form in the choroid at this period. Bone pains, usually localized, and localized subperiosteal accumulations of cells termed nodes, frequently occur during this time. The pain in these instances is due to intra-osseous or sub-periosteal pressure, produced by the dense accumulations of cells.

Now gentlemen, I think we have given sufficient attention to the pathology of active or general syphilis, to enable you to understand its various phenomena pretty thoroughly, and to demonstrate clearly to you this one important point, an acceptance of which will enable you to understand syphilis under all forms, and in the greatest variety of its pathological phenomena, viz: *That all pathological manifestations due to syphilis occurring during the active period of the disease, which lasts usually from six to eighteen months, are each and every one due to a localized cell accumulation and*

proliferation, and to nothing else, and that an intelligent appreciation of this fact will alone form a rational basis for the treatment of the disease, which is alike in every case, and consists simply of all those means, whether general or local, which tend to produce fatty degeneration or retrograde metamorphosis in the hyperplastic materials and induce their elimination from the body, while at the same time tending to improve the general health of the patient. Quite a long proposition, but necessarily so, for it contains the whole subject of syphilis within a comparatively small space. The only distinguishing characteristic of the syphilitic cell as contrasted with the normal germinal cell, is its contagiousness, which consists in its power of imparting to normal leucocytes, its own tendency to proliferation, by which as we have seen it is characacterized. This rapid proliferation does not usually cause destruction of tissue, but gives rise to phenomena which *a priori* we might expect from an accumulation of surplus nutritive material. This cell accumulation obstructs the tissues for a time, in uncomplicated cases, and then from prolonged pressure, innutrition and general causes, it undergoes fatty metamorphosis and is finally eliminated by the various emunctories.

According to Baümler, the infection of syphilis lasts from eighteen months to two years, after

which it is exhausted. After the cessation of the active period of syphilis, the blood and the secretions of open lesions cease to be contagious, and it may also be stated that in by far the greater proportion of cases, especially if they have been properly treated, no further manifestations of syphilis are ever experienced. Reasoning from these facts, it is quite logical to infer that the so-called tertiary period of syphilis to which I will hereafter call your attention, is not a stage of the disease at all, but is simply a period of generally unnecessary sequelæ, and indeed, such is now the teaching of our best authorities upon the subject. Hutchinson, Lee, Lorne, Baümler, Besiadecki, Otis, and many others incline to this view. And for my own part, I think that the list of cases of tertiary syphilis or sequelæ may be considerably narrowed, if we remember that some of them may be suffering from the excessive or injudicious action of mercury, rather than from the sequelæ of syphilis.

Lecture V.

Period of sequelæ, or so-called tertiary stage.—The tubercular syphilide.—Syphilomatous lesions.—Structure of syphiloma.—Favorite sites for development of syphilomata.—Tendency to necrosis and ulceration of tertiary deposits.—Non-infectiousness of tertiary lesions.—Normal character of the cells of gummy deposits.-Causes of gummy deposits.—Lymphatic obstruction.—Cause of the tendency to recurrence during stage of sequelæ.—Ordinary division of syphilis into stages.—Precocious and malignant syphilis.—The syphilides; their characteristics, nomenclature, and concomitant symptoms.-Syphilitic ecthyma and rupia.—Syphilitic pigmentation and cicatrices.—Duration of syphilis as a whole.—Insidiousness of syphilis.—Probationary period of syphilitics intending to marry.—Bearing of hygienic surroundings upon severity of syphilis.—Illustration of malignant syphilis.—Character of early lesions influences prognosis.—A typical case of syphilis.

Gentlemen:—Having finished our description of the lesions of the secondary or active period of syphilis, and having given the physio-pathological explanation of the various phenomena presented by that period of the disease during which we have general constitutional infection and localized cell accumulations, it only remains for us to consider the period of sequelæ, or the so-called "tertiary stage."

One of the most frequent and important of the tertiary lesions or sequelæ, is the tubercular eruption. This has been said to be due to a localized accumulation of morbid material in the tissues, or so-called "gummy infiltration," which is the basis of all tertiary lesions. This gummy material is

termed by Wagner "syphiloma," and is described by him, as an infiltration of cells and nuclei, the cells not being capable of differentiation from the normal white blood cell or leucocyte, and the nuclei themselves presenting no characteristic appearances. He states that their morbid effects are due to a mere interference with the function and nutrition of affected parts, by simple pressure. Baümler also claims that the histological elements of syphilomata, lack specific microscopic characters.

The tubercular or gummy lesion may develop in any situation, its favorite situations being the cellular tissue, skin, bones, liver, testes, brain and kidneys, and in children especially, the lungs. This gummy material is a grayish red, homogeneous mass of greater or less consistency, which may be found in the parenchyma of any organ or tissue of the body, either as a diffused or circumscribed infiltration, but never encapsulated. When this accumulation of morbid material is superficial, and exposed to unequal pressure, or when it is excessive, or involves the walls of the blood-vessels, thus giving rise to localized innutrition from pressure or vascular obstruction, the whole mass is liable to ulcerate, or break down into pus which may absorb through fatty or granular degeneration without ulceration.

As we have already seen, the lesions now under consideration have no specific inoculable properties, this view being supported by Ricord, Diday, Barensprung and Baümler. This is the only difference so far determined, between the histological elements of the tertiary, and those of the secondary lesions, save perhaps the greater tendency to destruction of tissue in the former. Now, it has been demonstrated that the longer the duration of the secondary stage, and consequently the more pronounced the changes in the lymphatic structures, produced by the lesions of the active stage, the greater the liability to tertiary lesions of a severe type. As the cells composing the gummata are not infectious, and are less active than the true syphilitic germinal cell, they are probably not the result of the action of a virus or poison upon the normal tissue elements, but are due to lymphatic obstruction, being no more nor less than an accumulation of normal embryonal cells, which are prone to undergo and produce various degenerative changes through nutritive disturbances. The lymphatic obstruction giving rise to this accumulation of embryonal cells, is the result of injury to the absorbents produced by the lesions of the active stage. Rindfleisch, who is unexcelled as an authority on pathological questions, says: "Luxuri-

ous new formations, catarrhs and surface secretions of various kinds, must be produced when the lymph conveyance is hindered." Now the results of scientific investigation tend to show that the new formations and surface secretions of tertiary syphilis, are all due to an accumulation of normal germinal material, and if this be true how else can we account for it, except by the existence of lymphatic obstruction? A very important fact bearing out this theory, is that the treatment of tertiary lesions is the same throughout, whatever the lesion, and consists in the administration of mercury and the iodide of potassium. Accepting the view of the formation of the gummata or syphilomata, which has been set forth, the term "gummy period," applied by some, is inaccurate, and the term "period of lymphatic obstruction" suggested I believe, by Otis, is more proper, as indicating the actual pathological condition present, and the exact manner of its production.

After the removal of the cells by fatty degeneration, there is always a tendency to recurrence, which explains the difficulty of curing the disease at this period. This tendency is due to an increased injury to the lymphatic structures, which were already greatly impaired by the lesions of the active

stage of syphilis. This impairment consists in a formation of fibrous tissue, as a result of low inflammatory action, mechanically set up by the cells. This fibrous formation of course interferes in a measure with tissue nutrition in different localities, by producing changes in the vascular walls, and it is claimed by some that a great deal of the trouble in so-called tertiary syphilis, is due to wide-spread fatty degeneration caused by this same vascular contraction. In any event these vascular changes do produce innutrition, and a tendency to destructive changes in those parts supplied by the affected vessels, and the nutrition of which is still further impaired by local pressure from accumulation of lymphatic elements. It is well-known that fatty and purulent degeneration are more likely to occur in some subjects than in others, and are most likely to supervene in individuals who are cachectic or debilitated from any cause. Debility would of course be produced by a prolonged and severe active stage, and indeed, Hutchinson claims, "that the liability to, and severity of, tertiary lesions, are in direct proportion to the duration and severity of the secondary stage."

Now, gentlemen, the conclusion at which we may arrive after a careful consideration of all the facts which I have endeavored to present to you, is this:

That the various lesions and different degrees of severity of the lesions of the so-called "tertiary stage of syphilis," depend upon, first, the amount of damage produced by the lesions of the active period of the disease, and its duration, and secondly, upon the constitutional condition of the individual, independently of any specific virus.

I have not yet given you the division ordinarily made of syphilis, deeming it best to first give you an idea of its "physiological pathology." As I have already stated in a general way, syphilis is ordinarily and somewhat arbitrarily divided into the so-called "primary," "secondary" and "tertiary stages," and by some an "intermediary" stage is described which comprises the lull, or at most the period of almost insignificant lesions following the active period, and prior to the development of the tertiary stage. "Primary syphilis" of course implies the initial lesion with its attendant glandular enlargements. "Secondary syphilis" comprises the earlier affections of the skin and mucous surfaces, and many of the lighter changes in the eye, testis and other glands, with some forms of nervous manifestations. "Tertiary syphilis" comprises the later severe ulcerative skin lesions, the deeper lesions of connective tissue, bone, muscle, cartilage and the viscera, and all the severe lesions of the eye,

testis, and brain; in short, all of those many and various changes, characterized by the so-called "gummy deposit." The line between the two stages is not always clear, but in typical cases the lesions, at first superficial, gradually increase in severity to the destructive pathological changes of the so-called tertiary stage or period of sequelæ. Some of the lesions properly belonging to the secondary group are liable to crop out with the tertiary lesions, and rarely on the other hand, nodes develop in the secondary stage.* In quite rare and malignant cases, the secondary stage may appear to be omitted entirely, destructive lesions ordinarily characterizing the tertiary period, appearing in a few months after the chancre. These varieties of cases include or comprise the cases of so-called irregular and malignant syphilis.

Secondary syphilis lasts often a year and sometimes two or more. I have already stated that the active period of syphilis has a duration of from eighteen months to two years, but there need not necessarily be manifestations of the disease during that time. You will understand, gentlemen, that the division of the stages or periods of syphilis involved in the physiological pathology that has been given you, is based upon pathological changes

*Osseous and subperiosteal swellings do develop during the secondary stage, but characteristic nodes are exceptionally seen.

altogether, and not upon mere symptomatology, as is ordinarily done. You will thus appreciate the fact that the so-called secondary stage, as ordinarily given, is merely that portion of the "active period" during which actual lesions are present. The division of the disease into primary, secondary, and tertiary stages, depends upon the form of the lesions, and is therefore necessarily inaccurate and unscientific, while the more rational division into the "initial" and "active" periods and "period of sequelæ" is founded upon a knowledge of the natural course of the disease in the tissues, the lesions being dependent upon this natural course, and not vice versa. Tertiary syphilis does not commence until at least one year after the initial sore, excepting in cases of malignant syphilis. As I have endeavored to show you, it is not a necessary stage of syphilis at all, and does not appear in by far the largest number of cases. It may, however, appear after years of apparent good health. The whole secondary stage is sometimes skipped, especially under treatment, and no manifestations of general syphilis appear until suddenly some tertiary lesion of a greater or less severe type develops. These cases are rare, and it must be remembered that there is a possibility of even some of these, being due to too much Doctor Hydrarg. I

have seen quite recently two cases in which three and nine years respectively had elapsed since the primary sore, during which time no secondary symptoms ever appeared, and in which true gummy ulceration existed.

The most prominent of the manifestations of syphilis are the eruptions of the skin, which are termed "syphilides" or "syphilodermata." These are many and various; but their classification may be rendered quite simple, thus: if papules are the most prominent lesion we term it a "papular syphilide." In the same way we have the vesicular, pustular, tubercular, scaly or squamous, and ulcerative syphilides, and such combinations as papulo-pustular, papulo-squamous syphilides, and so on. Ulcerative syphilides may be designated as superficial, deep, serpiginous, or perforative, as the case may be.

The most important thing with reference to syphilides is the consideration of their general characteristics. They are: 1st, polymorphism of the chancre; 2nd, rounded form of the eruptive lesions and ulcers; 3rd, lividity or ham color, becoming coppery, then grayish, and finally white and shining; 4th, absence of pruritis and pain; 5th, symmetry, generalization and superficial character of the early eruptions; 6th, tendency to

grouping of later eruptions, which involve the true skin and tend to scarring; 7th, scales white, generally superficial and non-adherent; 8th, crusts irregular, thick and adherent, and either of a greenish or black color; 9th, abrupt edges of ulcerations, which are not undermined, are sluggish, and bleed easily; 10th, the rounded, depressed appearance of the cicatrix, which is thin, movable upon the sublying tissues, pigmented at first sometimes, but eventually becoming white and shining.* In addition to these special characters of the lesions of syphilis, we have attendant symptoms, such as the so-called syphilitic fever in some cases, alopecia, headache, osteo-copic pains worse at night, analgesia, anæsthesia, indolent lymphitis, iritis, sore throat, and mucous patches.

We apply the term "polymorphous" to the syphilides, for the reason that there is no form of skin lesion which may not occur in syphilis, and no single form or type of lesion is usually present, e. g. a papular syphilide is rarely purely papular, vesicles, pustules, or erythematous patches being usually found at the same time, and the eruption being named from the lesion which predominates.

The tendency of the syphilides to arrange themselves in a rounded form, is peculiar and well-marked, the later syphilides being especially dis-

*Vide Van Buren and Keyes.

posed to circular grouping. The color of the syphilides is not an inflammatory red, but is a vinous or purplish red, resembling the color of raw ham, the color gradually passing by pigmentation into a coppery hue, or more deeply to a brownish or black color. The pigmentation may last for years, but finally clears off gradually from the center towards the periphery, the cicatrix or spot becoming eventually white and shining.

Pain and pruritus are rarely present in uncomplicated syphilides, excepting when irritated or inflamed. In dependent portions of the body, as in the legs, or in such situations as the throat, which are subjected to constant irritation, ulcerations are liable to be quite painful. When an eruption that is evidently syphilitic gives rise to pain and itching, we can usually find some cause of irritation independent of the syphilide. The patient may, perhaps, have an irritable skin, and a pruritus which constantly troubled him prior to the development of syphilis. Contrary, however, to the general rule, the early eruptions of the scalp are attended by pruritus.

The earlier syphilides are superficial, and leave no cicatrices, and are symmetrical; appearing upon the flanks and sides of the trunk, the sides of the neck, forehead, etc. The later eruptions are

grouped and not generalized, and are characterized by destruction of tissue, as evidenced by the resulting cicatrices. They may leave scars, even if no ulceration occurs, which is true of no other lesion excepting the scrofulides, of which the lupus non-exedens is an example, but which leaves an irregular burn-like scar. The scales of the squamous syphilide are very thin and non-adherent, not at all like the thick, imbricated scales of psoriasis. The scabs of the ulcerative syphilides are thick, rough, and adherent, dark, of a greenish black color usually, but sometimes light, if the lesion be simply pustular. In this connection I will call your attention to two important varieties of syphilide: The first is the syphilitic ecthyma, which consists in an eruption of large pustules, which soon scab over with a characteristic dark greenish crust. On lifting this crust, a characteristic sharply cut circular ulcer will be found. A step further, and we have the syphilitic rupia, in which as the crusts form they are pushed up and replaced by accumulations of material from beneath, and the ulceration gradually extending at its periphery, we soon have a peculiar appearance quite like an oyster shell upon the surface. The crusts are piled up in imbricated layers, which when lifted from their bed, expose the results of tissue destruction,

in the shape of extensive ulceration. These rupial crusts may become very large, and when numerous, form a most disgusting spectacle.

I have already stated that the ulcerations of syphilis are round, clear cut, and not unlike chancroid. They are sluggish like any chronic ulcer, and are painless, unless greatly congested and inflamed, or over a bone, the periosteum of which is involved. Cicatrices remaining after destruction of tissue by syphilides, whether there has been ulceration or not, are usually rounded, thin, depressed, and movable, not adherent. They are at first pigmented, especially in brunettes, but eventually clear up and become white and shining. In strumous subjects, in whom the lesion is likely to be a combination of struma and syphilis, the resulting cicatrices are apt to be puckered and irregular.

Now as for the duration of syphilis: There is no disease, the duration and course of which are so uncertain as those of syphilis It is impossible to state, in any given case, that the disease has, or has not terminated, and this is more especially true when we consider that it may permanently modify the constitution of the individual, even when no actual manifestations of the disease appear after a certain time. The disease may manifest itself as a

series of mild secondary eruptions followed by apparent recovery, or it may afford no evidence of its presence after the initial sore, until late in life, when suddenly tertiary lesions or sequelæ crop out. In a large number of cases, we must acknowledge that syphilis causes a permanent modification of the patients' constitution, still we must believe that syphilis can be cured; and my own opinion is, that it is a perfectly curable affection in by far the greater proportion of cases, providing the patient be intelligent and the doctor conscientious. We have proof of this in the cases of second attacks, cited by reliable authorities, and we have already seen that whatever the possibilities of tertiary lesions, they are not necessary, and are undoubtedly sequelæ. We find that the patients in the late tertiary period of syphilis may procreate healthy children, and that the blood and secretions of tertiary lesions are no longer inoculable.

As found among the better classes, syphilis is a very insidious disorder, and we will meet with innocent ladies complaining of various symptoms which are vaguely described, and as vaguely treated, as neuralgic or rheumatic, which are no more nor less than slight manifestations of old Proteus, and by which they perhaps come honestly enough. Children may have obscure symptoms which mislead both parents and physician, and which are

conveniently termed "scrofula" in some instances, according to my own view of the heredity of scrofulosis. The old gentleman forgets a "little sore" he once had, and never dreams of attributing the little troubles of his wife and children, to those dimly remembered, and as lightly weighed wild oats that he once sowed. But whether remembered or not, the harvest garnered as the fruit of that sowing is none the less certain.

The practical question now arises: "When is it safe for a person to marry after having had a chancre?" On the average we may say three years, or we might fix the period as eighteen months after the disappearance of the last syphilitic lesion, providing three years have elapsed, the patient being meanwhile under careful treatment, which is to be persisted in until after the birth of the first child. During the three years named, symptoms may crop out at any time, but under careful management, they are usually slight, and whether we can call it a cure or not, the virulence of the disease seems to be exhausted in cases of mild or moderate severity so handled, in about three years. If a patient be addicted to excesses of any sort, if he does not take a steady and efficient course of treatment, but treats himself—perhaps to excess—at spasmodic intervals, his chances are of course not very good.

The severity of syphilis depends mainly upon the constitution and hygienic condition of the patient. As we have seen, we do not have at the present day, such severe cases as a general rule, as in past years, the reason for which I have already given. In the better classes, it is a very mild disease by comparison with the lower walks of life, in which we may still meet with cases exemplifying the serious character of the disease. Even among persons who are constitutionally and hygienically well circumstanced, we sometimes see cases of the most malignant type. I well remember an instance in illustration of this fact: During last Summer I was consulted by a fine appearing, exceptionally well nourished man; whose circumstances were the very best that could be desired, in regard to a small abrasion upon the glans penis. This had appeared a day or two after a suspicious exposure, and had probably resulted from friction during intercourse. I told this gentleman that while the sore had nothing at all alarming about it, yet it would bear close watching, and dismissed him. In a few days—at the end of two weeks from the date of exposure—the sore became slightly indurated, constituting the parchment variety of chancrous induration. This chancre disappeared in a very short time, but was followed by a most malignant course of syphilis. True tubercular lesions appeared in various

situations, and deep ulcerations developed and ran their course inside of three months, the patient barely escaping with his life.

We can never judge the severity of the syphilitic infection, by the character of the primary sore, and this case serves as a very forcible illustration of this statement. In private practice gentlemen, you will seldom see cases of this sort, and only those of you, who in the future are so fortunate as to enjoy the privileges of some large hospital, will be apt to realize the severity of syphilis in its more marked and serious phases.

I have just stated that it is impossible to predict the severity of syphilis by the character of the primary sore, but this statement requires some qualifications, e. g., in cases of phagedaenic chancre we can prognose a severe course of syphilis, not because of any intrinsic severity of the infection, but because the constitution is at fault. This constitutional defect will have the same influence upon the general symptoms, that it does upon the primary lesion in inducing phagedaena. The character of the earlier eruptions will influence the prognosis, for the milder and more insignificant these are, the milder the subsequent course of the disease is apt to be, and vice versa. This is exemplified in cases of malignant syphilis, in which the earlier lesions are deep and destructive. Ves-

icular, and still more, pustular eruptions, indicate a severer type of the disease than do the papular and erythematous lesions.

Now gentlemen, I have given you all that I think necessary or practical regarding the pathology and course of syphilis. Remember its physio-pathological features, and you will have an all powerful advantage over those physicians whose ideas of syphilis are entirely bounded by the proposition that "Pox is syphilis, syphilis is pox, the cause is venereal, and mercury and potash are good for it." Please don't look at the disease in that way, for although such a course is broad and simple enough, it is the pathway to imbecility as far as the scientific study and treatment of syphilis are concerned.

I will conclude this morning, by depicting in a few words, a typical case of syphilis: A young man exposes himself by a suspicious intercourse, and during the performance of the act, causes a little abrasion upon the glans penis—or possibly he still further irritates or abrades a pre-existing abrasion or patch of herpes. This abrasion may heal in a day or two—or may escape his attention entirely for that matter,—or it may persist. In about two or three weeks a little hard lump or nodule appears on the site of the abrasion. This gradually enlarges until of the size perhaps of a

filbert. In a few days, say seven or eight, small lines of hardness appear beneath the integument of the penis leading from the induration and in a few days more, small, hard and freely movable lumps appear in the groins. What have we here? Syphilitic lymphitis and bubo. Mark how the cells are slowly traveling on. Now, we have an interval of perhaps six weeks, after which we note an enlargement of the cubital or epitrochlear glands at the elbow over the internal condyle, which is quite characteristic, and enlargement of the general system of lymphatics. In a day or two or more, or at the same time, we have an eruption of macules or papules resembling measles, these being scattered over the surface in variable amount; —which eruption may appear simultaneously with general adenopathy and a still further increase in the size of the lymphatic glands.

A sore throat may now be complained of. After a variable interval of some weeks or months, we notice an eruption of papules, most prominent about the roots of the hair on the forehead—the venereal crown,—which papules may become vesicular or pustular, according to the intensity of the infection and the constitutional condition of the patient. Sore throat is frequently experienced shortly after the appearance of the roseola, or more likely during the papular eruption, and syphilitic

iritis is likely to occur at any time after the appearance of the papules. Late in the disease the iritic inflammation takes on the so called "gummy" or nodular form, when it is quite characteristic, but the early syphilitic iritis is practically indistinguishable from the rheumatic form.

During the latter part of the first year, bone pains and nodes are apt to appear, but they may appear earlier. Falling of the hair occurs usually during the early months if at all, and in common with the form of lesion known as the mucous patch, is most likely to occur during the papular eruption.

Pustular and ulcerative lesions begin to appear during the latter part of the first year or eighteen months, and are succeeded by ecthyma, rupia, tubercular or gummy lesions of the bones, skin, brain and other viscera, and various nervous lesions, with destructive bone changes and other lesions characteristic of the "tertiary" period or period of sequelæ. These latter severe lesions may crop out from time to time during the life of the patient, or may be delayed until very late in life. The life of the patient may eventually be destroyed by profound pathological changes in the cerebro-spinal axis, or abdominal viscera.

At the next lecture gentlemen, we will consider the treatment of syphilis.

Lecture VI.

Treatment of Syphilis.—Simplicity of local treatment of chancre.—Avoidance of caustics and ointments.—Excision of chancre.—Advantages of excision.—Supposed antidotal effect of mercury in syphilis.—Proper method of using.—Power of mercury to induce fatty degeneration and elimination of morbid material.—Uniformity of all successful methods of treatment, in producing fatty degeneration.—Clevenger's theory of the mechanical action of mercury.—Probability of mercury entering the system in both mechanical and chemical conditions.—Action of mercury upon the blood.—Action varies widely under different conditions.—Action of iodine in syphilis.—When to begin the use of mercury.—Form of mercurial to be selected.—Importance of protracted treatment.—Mercury by inunction and fumigation.—Local use of mercurials.—Mercury by hypodermic injection.

Gentlemen:—We now come to that portion of our course, which you no doubt are much more anxious to learn than the more abstruse and to you perhaps, less practical topic of the pathology of syphilis. Remember what I have already told you, however, regarding the necessity for a good idea of the pathology, in order that you may understand the rationale of the therapeutics of the disease.

We have studied the treatment of the primary sore in connection with the description of its pathological characters, but there are some points which will bear repetition, and others to which I have not yet alluded, but which appear to me very important. In the first place, do not forget that the chancre is to be coaxed, not driven, and that it

will cause little annoyance if you give it half a chance. Use the black or yellow wash, calomel or iodoform powder, or even simple absorbent cotton as a dressing, and let the induration take care of itself. If you wish to see by contrast, the results of meddlesome officiousness, try rubbing a hard chancre with nitrate of silver, and then apply some nasty, greasy ointment. You will have a fine mess of it, and a condition of affairs which I often see in patients who have been treated in this manner, by physicians, drug clerks, or very often by themselves. Avoid grease and nitrate of silver, as an abomination, if you would not lose your patients' confidence. If, as in the case of a mixed sore, it becomes necessary to cauterize, use a caustic, and have done with it, and not an irritant like nitrate of silver, which sears but does not destroy. Apply carbolic acid followed by the fuming nitric, or better still, use pure bromine or the actual cautery. The form of caustic is not so important as the manner of its use. Select your caustic early in practice, and stick to it until you know how to use it. As a last injunction instruct your patient in the matter of rest. Let him rest the affected member by avoidance of sexuality in thought or action, by taking very little exercise, and no stimulants, and lastly by handling it as little as possible. The

oftener he examines himself to note the progress of the case, the worse he will eventually be.

There is one radical method of dealing with the chancre, which I commend to your attention, and which is often a wise thing to do. I refer to the treatment by excision. It is claimed by some advocates of this method, that by it the general symptoms are modified and in some instances prevented entirely, not even the indolent glandular changes being perceptible. Theoretically, if the views of the pathology of the disease which I have called to your attention, be correct, excision of the initial induration ought to prevent general infection completely, but unfortunately this has as yet to be proven to be the case in actual practice. As for myself, I am performing excision whenever the patient will consent, and am trying to arrive at a definite conclusion in regard to the matter, from actual observation. I have already studied ten cases in this way, and have become pretty thoroughly convinced that the operation is of benefit. I have not yet omitted the administration of mercury, but am positive that excision followed by the exhibition of the drug is productive of better results on the whole, than the treatment of mercury alone. There are several considerations which may be advanced and which are in the main indor-

sed by Otis, in favor of the operation, in which nearly all will agree, viz.: We thereby remove a constant focus of infection, which is present as long as the induration persists. 2d. We at once remove a large mass of syphilized cells which would otherwise only be removed by the slower process of fatty degeneration, absorption and elimination. 3d. We obviate the possibility of the transmission of the disease to others by means of the initial lesion, a point of great importance to married persons. 4th. We lesson the danger of suppurating bubo, in case the chancre should inflame. 5th. We remove a constant source of irritation, and lessen the danger of phagedæna and inflammation which might disable the patient. 6th. The patient is able to resume his marital relations at once, after the incision has cicatrized perfectly. Why it is that we cannot prevent constitutional syphilis, by excision of the chancre prior to local glandular changes, is not clearly explicable, if we accept the view that the disease is practically local primarily. It is probable that a morbid impression has been made upon the tissues by the syphilitic poison, which began the moment infection occurred, and which has extended far beyond the limits of the initial lesion before its appearance. Excision of the chancre should be preceded by washing the

parts in a solution of bichloride of mercury 1-1000. The ulceration if any exist, should then be cauterized, and dusted with calomel. The chancre should now be transfixed with a tenaculum, raised from its bed, and the mass of induration quickly removed with a sharp scalpel or curved scissors. The parts should be sutured with fine catgut or silk, and the parts kept at rest for a few days with cold water dressings. Within forty-eight hours as a rule, the wound will have united, and the stitches may be removed. In a few days, if no lesion be present, the patient may resume his marital relations.

The constitutional treatment of syphilis, is naturally a subject of paramount importance. Errors, more serious in their effects than the disease itself, are often committed by those whose practice is not founded upon a sound pathological basis. The disease has long been treated upon the principle that there is present a constitutional poison, which must be antidoted, and mercury has appeared to be the antidote. Hutchinson has taught that this drug has the property of neutralizing the specific virus upon which syphilis is supposed to depend. This theory of the antidotal effect of mercury, has been accepted by some of our best syphilographers. They, however, in

thus accepting the antidotal doctrine, have seemed to consider it all-sufficient, and have failed to explain the the physiological action of the drug, and have given it solely because experience has proven that it is curative in syphilis. Now, we find that even when the system has been completely saturated with mercury, even to the extent of producing severe ptyalism, the disease returns directly the drug is withdrawn, thus showing that the syphilis has in no sense been antidoted. On the contrary, the case is usually worse than ever. *On the other hand, we find that the slow, continuous and moderate use of mercury, for a period corresponding to the maximum time of the normal duration of the disease as nearly as may be, and without at any time producing its full physiological effects, will bring about a cure, which can be accomplished in no other way.*

It is well known that mercury has the power of inducing fatty degeneration, and elimination of inflammatory products, or in other words, "of relieving tissues encumbered with superfluous and obstructive material." This condition of the tissues is precisely what we have in syphilis, and as mercury is the best remedy we have for such a pathological state, irrespective of causation, we administer it throughout the natural course of the

disease, *not to antidote a poison, but to remove the morbid results produced by it, as fast as they are formed, until finally the syphilitic impression upon the organism has naturally exhausted itself.* We have already seen that the "virus" of syphilis is not a material substance, but practically consists in an influence which a degraded cell has over another which is healthy, causing rapid proliferation and obstructive accumulation of the cells so influenced. It is a rather peculiar fact, that every method of treatment for syphilis that has been advocated for the last two or three centuries, has comprised such measures as tend to produce rapid tissue change. The sweating cure, the use of hot baths as at the Hot Springs of Arkansas, the purgation and starvation cures, Boeck's method of syphilization, and the treatment by pustulation with tartar emetic, all of which have been recommended by various authorities at different times, are chiefly active through their power of inducing fatty changes in the tissues.

The action of mercury upon the system has been the subject of considerable controversy, particularly as regards the form in which it enters the blood. A very ingenious theory was promulgated a few years ago by Prof. S. V. Clevenger, of Chicago. The professor has en-

deavored to show that mercury does not enter the system as a chemical compound, but as metallic mercury in an exceedingly fine state of subdivision, and that it acts upon disease—particularly syphilis—in a purely mechanical manner, by pushing the syphilized cells through the fine capillaries, and eventually into the various eliminative areas of the body, from which they are removed as is other excrementitious matter.

Clevenger has found by examination of the tissues after the use of mercury by inunction, that they are filled with minute globules of the metal, thus showing that it does, in that instance at least, enter the blood in a state of fine subdivision. Another argument is the fact that free mercury is to be found in the tissues of patients who have been taking the drug for sometime.

The prevailing view has been, that mercury enters the system as a chemical compound, and brings about an antidotal effect, or produces a fatty metamorphosis of the diseased cells.

My own idea is that mercury may enter the blood in either form. When it enters as a chemical compound, it may split up so as to liberate a certain amount of the pure metal, or entering as metallic mercury, it may undergo chemical

changes in the tissues, these effects varying in different cases. Certain it is that finely subdivided mercury introduced into the great physiological chemical laboratory of the body, is quite likely to undergo chemical changes. Should it be demonstrated that mercury cannot exist in the body as a chemical compound, and that it cannot act in any but a mechanical manner, I should still be inclined to doubt its alleged ferret-like properties of chasing and pushing the diseased cells out of the back doors and chimneys of the economy, and should be inclined to believe that it acted by blocking up the vessels leading to the syphilitic neoplasia, and thus enhancing their own intrinsic tendency to fatty degeneration. Practically, I am firmly convinced that the drug acts by inducing fatty degeneration, but whether by a mechanical or chemical action, or by a combination of both—which is highly probable—does not seem to be of any great moment.

The action of mercury upon the blood is of great practical interest, inasmuch as by its use two diametrically opposite effects may be produced, according to: 1st. The dose used; 2d. The duration of its administration; 3d. The constitutional condition of the patient; and 4th, the stage of the disease. If the drug be given in full doses for a few days, or in frequently repeated

small doses for twenty-four to thirty-six hours, severe stomatitis and ptyalism may be produced. If it be given in a less vigorous fashion for a longer period, we may have pallor and debility, due to a depreciation in the quantity and quality of the red blood corpuscles, to defibrination of the blood plasma, and increased tissue waste. A certain degree of these effects is necessary in the treatment of syphilis, but it is our chief aim to keep them within bounds, and to avoid the danger of producing permanently injurious effects. Such effects as great pallor, wasting, and debility, pustular or vesicular eruptions with fever known as the "mercurial fever," and marked tremors, may result from the action of mercury, and that too, without the occurrence of ptyalism. On the other hand, small doses of mercury, in various cachectic or anæmic conditions, particularly during the sequelæ of syphilis, will rapidly and markedly increase the quantity, and improve the quality of the red corpuscles and fibrine, thus lessening hydræmia. This statement is based upon the experiments of Prof. Keyes with the hæmatometer, and moreover, upon personal observation of the action of the drug.

There is another remedy which experience has shown to be curative in syphilis, and which is second only to mercury. I refer to iodine, which

in the form of the iodides is exceedingly useful, especially in late syphilis. The iodides,—of which potassic iodide is the type—act in two ways in the cure of syphilis: viz, first, by their own intrinsic power of producing fatty degeneration, and elimination of morbid products, and second, by liberating and exciting to renewed activity the mercury which may be stored up in the tissues, thus assisting its action. It is evident that the first of these effects is the most important, for the iodides have a most powerful effect in resolving the products of inflammatory changes, or of adventitious deposits, irrespective of their cause. I make this assertion in the face of the argument that iodine can cure syphilis, only by liberating mercury from the tissues, and that it is the mercury and not the iodides that produces the curative effects. That this is incorrect is shown by the beneficial effects of iodide of potassium in cases of late syphilis in which mercury has never been administered. *

Having decided upon the administration of mercury in the constitutional management of syphilis, when shall we begin its use? It is claimed by some, that it is not good practice to begin treatment until the secondary symptoms develop, until, in short, the case is matured, as mercury will have

* In the British and Foreign Medical Review for Oct., 1845, Hassing, of Copenhagen, reported 195 cases of syphilis, 70 of which were cured by the iodide of potassium alone, without mercury at any stage.

little effect prior to that time. Now I believe that it is our duty to begin treatment just as soon as we are positive of the diagnosis, as we thereby shorten the duration of the initial lesion, and modify or even prevent, secondary symptoms. To save the patient from lesions upon the body or face, which "he who runs may read," is very desirable, and is only to be accomplished by early treatment. It must be acknowledged however, that those cases in which treatment is not begun until pronounced eruptions appear, sometimes seem to respond more readily to therapeutic measures, and to give rather less annoyance during the active period, than those in which mercury is given as soon as the chancre develops. Whether the prospect of a permanent cure is brighter, is questionable.

Having determined upon the administration of mercury, it remains to select an eligible preparation. The mildest and least irritating form of the drug, is the protiodide, or as it is sometimes termed, the green iodide. It is best given in pill form, in doses of on the average, one-fifth of a grain, thrice daily. This dose is to be continued for several days, and then increased one pill per day until the gums become somewhat tender, or the stomach and bowels are disturbed. I generally give the drug until the gums are slightly affected,

and then gradually lessen the dose until the patient is taking about half the amount necessary to produce slight physiological effects. This, as Dr. Keyes terms it, is the patient's average dose, and is usually from two to four pills of the strength mentioned, daily. It is generally continued throughout the course of treatment. It is well to bear in mind the possibility of injurious effects from the cumulative action of the drug, and also the fact that it is apt to lose its effect upon the disease after a time. A good plan is to omit the protiodide at intervals of two or three months, and give potassic iodide pretty freely for about four weeks. In this way any mercury which may be stored up in the tissues, is liberated, rendered active, and eliminated, and the system again rendered susceptible to its action by the time the pills are resumed. By proceeding in this manner, you will always avoid the possibility of injuring your patient with mercury.

It is always a matter of great difficulty to induce our patients to take medicine for a sufficient length of time to effect a cure. They are prone to find fault with us if we are honest with them, and to suspect us of sordid motives if we attempt to coerce them into prolonged treatment. It is a solemn fact gentlemen, that people try desperately

to compel the physician to be dishonest. They mistake honesty for lack of skill, and will more readily pay the quack huge fees for false promises and blatant pretenses, than the scientific physician a moderate amount for skillful treatment. They have always at their tongue's end a long list of their friends who were cured of a bad case of syphilis (?) by Dr. So-and-So, in three months. In spite of this perverseness of human nature, however, it is your duty to tell your patient that if he wants to get well, he must take medicine for at least two years, and if any doubt exists at the end of that time he had better add another year, especially if he has matrimonial intentions. Allow no syphilitic patient to marry under three years from the appearance of the chancre, if you would have clear consciences.

Another difficult item in the management of most cases of syphilis, is convincing the patient that it is absolutely necessary for him to avoid the use of liquor and tobacco for an extended period, and that he must abstain from the various dissipations and excesses to which he has been accustomed. This point must be insisted upon however, and with good conduct upon the part of the patient assured, half the battle will have been gained.

In some cases you will find that your patient does not tolerate mercury well, and that a diarrhœa or gastric disturbance follows the slightest attempt to crowd the drug. In this event, one-eighth grain of ext. hyoscyamus should be added to each pill. A good plan too, is to give the patient a few five grain powders of bismuth subnitrate, with instructions to take one whenever the stomach or bowels become troublesome. In other cases, the patient will stand a large amount of mercury, and I have repeatedly given several grains of the protiodide daily for some weeks, without affecting the gums or the digestive tract in the slightest degree. In such cases the large doses should be kept up for a few weeks, and then diminished to about four or five pills daily. In some cases you will find the pil. duo. introduced by Dr. Bumstead to be an excellent preparation, especially when the patient is anæmic and debilitated. The pil. duo. contains gr. ii. of pil. hydrarg. and gr. i. of ferri sulph. exsiccat. It should be given precisely like the protiodide. It usually produces constipation, hence an occasional dose of hunyadi or bitter water may be necessary.

When a patient fails to respond readily to the internal administration of mercury, or when gastro-intestinal irritation is marked, the drug may be

used by inunction. The oleate is the best preparation, although too expensive for some patients. The twenty per cent. solution should be used, and about 3i rubbed into the axilla morning and night. As the axilla become irritated, the rubbing may be done at the flexures of the joints, where the skin is thin and absorption readily occurs. The mercurial ointment, though less elegant, may be used as a substitute for the oleate. It may be rubbed in, or spread upon a white flannel band in contact with the abdomen, the band being shifted about occasionally, and the skin kept clean by daily washing. Another good plan in hospital practice, is to rub the ointment upon the soles of the feet, and have the patient wear heavy woolen socks.

In some cases inunctions or baths must be wholly depended upon, and it may be said in this connection, that they are very efficacious in obstinate skin lesions. Frictions of the oleate are useful in rupia, and will also assist in removing the induration of the primary sore unless ulceration exists, in which case it produces irritation.

A simple method of giving a mercurial bath, is as follows: A small tin plate supported by a tripod, an alcohol lamp, and a pan of boiling water, are all that is necessary. The patient being stripped,

seats himself in a cane bottomed chair, and wraps the chair and his body thoroughly in blankets. About twenty grains of the mercurous chloride is placed upon the plate, the lamp is lighted, and the whole apparatus is placed under the chair. In a few minutes the calomel is vaporized, and with the steam from the boiling water, is deposited upon the skin of the patient. In fifteen minutes the lamp may be extinguished, and after ten minutes more, the patient should wrap himself in a dry blanket and go to bed. In the morning he may rub himself with dry towels, the mercury having become in great part absorbed. About three baths per week are necessary. Calomel is the best preparation for fumigation, because of its freedom from irritating properties, and the readiness with which it volatilizes without reduction to the metallic condition. The red oxide also volatilizes readily, but its fumes are more irritating to the respiratory tract.

It is sometimes necessary to bring a patient under the influence of mercury very rapidly, e. g., in cases of syphilitic iritis, in which a few hours delay might be fatal to the integrity of the eyes. In such an event calomel in doses of $\frac{1}{12}$ gr. every hour, will accomplish the desired result; and if necessary, ptyalism can be produced in this man-

ner within twenty-four to forty-eight hours. Another method of rapid and efficacious introduction of mercury, is by Lewin's method of hypodermic injection.* From $\frac{1}{16}$ to $\frac{1}{8}$ of a grain of the bichloride, in combination with $\frac{1}{30}$ gr. of morphia and a small quantity of sodium chloride, are dissolved in fifteen minims of distilled water, and injected into the cellular tissue, preferably of the back, once or twice daily.† There is a vast difference in the susceptibility of different patients to these injections. I have never seen an abscess produced by them, but some patients complain bitterly of the pain following their administration. In others, hard and painful indurations follow their use. If the precaution is taken however, of introducing the needle well into the cellular tissue before injecting the fluid, very little trouble will be caused in the majority of cases. It is probably the best treatment for syphilis, in a large number of cases, if you can get your patients to attend strictly to treatment. As an adjunct to internal treatment, the injections are excellent, and I am at present giving them in most of my cases. There is one point to which I desire to call attention, viz: the bichloride makes the needle very brittle, and unless you change it frequently, you are quite like-

*Lewin, "Behandlung der Syphilis, mit Subcutaner Sublimat—injection," Berlin, 1869.

†Stern, Progrés Medicale, Paris, 1878.

ly to break it off in the tissues, an accident which the patient is quite liable to criticise. For the average patient in the hands of the general practitioner, it is probable that Lewin's method is inferior to the internal use of the mild iodide.

In the case of females with very weak stomachs, or in infantile syphilis, the gray powder or hydrarg. cum creta, is an excellent mercurial preparation. If you have to crowd the mercurial, do so by superadding fumigations or inunctions, rather than by increasing the internal dose. A preparation recently extolled abroad, is the tannate of mercury, which is claimed to be perfectly unirritating. The peptonate is another fanciful preparation used by our French confreres. At my next lecture gentlemen, I will mention the evil effects of mercury.

Lecture VII.

Necessity for appreciating the evil effects of mercury when improperly given.—Prejudice against its use.—Depression from mercury.—Mercurial ptyalism and stomatitis.—Care of the teeth during a mercurial course, to prevent ptyalism.—Causes of salivation.—Treatment of salivation and stomatitis.—Rheumatoid pains as an indication of excessive use of mercury.—Pain in the heels and soles of the feet from mercury.—Possibility of some of the alleged late lesions being due to mercury.—Action of iodine preparations.—Iodides in precocious syphilis.—Methods of using iodine and its preparations.—Large doses of the iodides in destructive and nervous lesions.—Unpleasant and injurious effects of the iodides in excessive doses.—Iodism and its treatment.—Iodine eruptions.—Tendency to the use of questionable preparations in syphilis.—Mistura alterans, (Mc. Dade's), Tayuga, Potassium bichromate, Coca, Iodoform and iron.—Local management of certain syphilitic lesions.—Necrosis of bones in late syphilis.

Gentlemen:—There is a strong tendency upon the part of most teachers upon the subject of therapeutics, to speak only of the good effects which are claimed to result from the administration of various drugs, and to avoid the discussion of those evil effects which are likely to occur at the hands of the inexperienced or careless practitioner. This I believe to be wrong, and I will therefore state with reference to mercury, that it is a drug which must be used with great circumspection. You will meet with a very firm, and it must be confessed, fairly well grounded prejudice against its use, existing in the minds of the laity. We must of course, take into consideration the fact that many of the alleged evil results of mercury

are due to the fact that its use has not been faithfully persisted in for a sufficient length of time, but with all this, there is undoubtedly a certain proportion of cases in which serious injury to the system of the patient may be justly laid at the door of this remedy. With proper care, however, I venture to assert that there is no drug which is safer or more reliable, and I have yet to see a single case of permanent injury resulting from the drug, when properly used.

We occasionally meet with cases in which mercury has a very unsalutary effect upon the patient, in the form of intense mental and emotional depression, even when very moderate doses are given. In such cases it may be necessary to give tonics and even stimulants, in order to counteract this condition. Or it may even be necessary to stop the mercury entirely, and depend upon potassium iodide. Coca will be found useful in such cases.

One of the most frequent of the injurious effects produced by mercury is ptyalism. Salivation in any marked degree is always injurious, and no greater effect should be produced than a slight redness and tenderness of the gums, with a slight increase in the salivary secretion, a coppery taste in the mouth, and what is often a good

indication to diminish the amount of mercury, a sensation as if the teeth were too long. To this latter symptom I desire to call especial attention. Ulceration of the cheeks or gums sometimes occurs without previous salivation, but this is quite rare. To prevent these annoyances, the mouth and teeth ought to be thoroughly put in order by the dentist, prior to beginning treatment. Tartar should be removed and the teeth cleaned, and all those which are decayed, either extracted or filled.

The causes of salivation are, iodiosyncrasy with moderate doses of mercury, or large doses without idiosyncrasy. Diseases of the mouth and gums predispose to it, and sometimes exposure to cold and wet during a mercurial course will bring it on. When salivation occurs, it requires treatment. Of course the first thing to do is to stop the mercurial. The chlorate of potassium may be given internally, and a mouth wash used, composed of the chloride of potassium and tincture of myrrh, in the proportion of ʒi. of the potass. chloride and ℥i. of tr. of myrrh to ℥iv. of water. Glycerine may be added if desired. Remember to specify the chloride, and not the chlorate in this mixture. In some severe cases of salivation, the patient cannot swallow solid food, and whether this be the case or not, fluid aliment

is indicated. I hope that you may see a case of mercurial salivation sometime, in the practice of somebody else, as a sort of warning to you regarding the abuse of a really excellent drug. The fetor of the breath in these cases is something horrible, and is due to the presence of decomposing fat in the saliva, produced by the action of mercury upon the tissues and eliminated by the salivary glands. In some cases of mercurial stomatitis, the cheeks, tongue and lips are fearfully swollen, perhaps ulcerated, and covered with a yellowish pultaceous deposit, which is eminently characteristic.

You will find in certain instances chronic pains of a rheumatic character, muscular and articular, resulting from mercury, and I have learned by experience, that when a patient who is taking much mercury, begins to complain of vague pains in the forearms and legs, it is time to drop mercury, and give iodine. There is one peculiar fact which I must mention, and that is, that some patients complain bitterly of pain in the heels, and sometimes the soles of the feet, similar to that which occurs in gonorrhœal rheumatism. This I firmly believe to be due to mercury. When your patient complains of his feet being tender, lessen the amount of mercury, and give the iodides, if you would save yourself trouble. There is a serious question

in my mind whether some of the ulcerations of the mouth and tongue in the later periods of syphilis, may not be due to mercury. I see many such cases in which the continued use of the drug appears to make matters worse, and I find that when iodides are substituted, improvement at once occurs. This might be attributed to the action of the iodine in liberating and revivifying, so to speak, the latent mercury, but I doubt it being the correct explanation.

The use of the iodides in syphilis requires some special notice. The active element in the iodides, is supposed to be the free iodine which is liberated in the system, but there seems to be some difference in the degree of effect exerted by the various salts. The potassic iodide is the most powerful, but is the most liable to produce gastro-intestinal irritation. This does not however, impair its usefulness to a great extent, for it is the most generally used of all the preparations of iodine. The sodic salt is milder, and is a useful substitute for the potassic iodide, where the patient has a feeble or irritable digestive apparatus. The iodides are often and successfully used in combination, the ammonium iodide being combined with the iodides of potassium and sodium. Pure iodine is useful, but often too irritating.

It is the custom with most practitioners, to use iodine and its preparations only in the late periods of the disease, and chiefly in tertiary lesions, but it will be found that many cases of obstinate secondary lesions will not yield until the iodides are given. As I have already stated, it is well to give a few weeks' course of the iodides from time to time, throughout the course of mercurial treatment. A small amount of the biniodide may be given at the same time if thought best. In cases of precocious syphilis, in which destructive lesions or nervous changes come on early in the disease, the iodides are our chief reliance. It is in late syphilis however, that the iodides will be found most reliable, especially if combined with mercury in the form of "mixed treatment." Gummy lesions require an excess of the iodides, but in all cases, after the serious lesions are under control, a prolonged mild mercurial course should be instituted. This is the proper method of treating the deeper lesions of the brain, spinal cord, bones, viscera, testicle, etc., the tubercular lesions of various kinds, the various scaly eruptions, and those later syphilides which tend to aggregate themselves in groups, or to become particularly obstinate. As an example of the formulæ for the mixed treatment, I will give you a quite popular combination:

℞ Hydrarg. bichloridi..... gr. iv
Ammon. iodidi..... ʒ iii
Kalii iodidi..... ʒ vji
Tr. cinchonæ Co. or Syr. Sarsap. Co..... ℥ viii
M. Sig.—ʒ ii in wineglassful of water after each meal.

Prof. Gunn's "three-eights" mixture is an excellent one for the administration of iodine. It is as follows:

℞ Iodinii Resubl..... gr. viii
Potass. iodidi..... ʒ viii
Syr. Sarsap. Co..... ℥ viii
M. Sig.—ʒ i dose.

Always instruct your patients to dilute these preparations well before taking, as they are all more or less irritating to the stomach, and as far as possible, to take them after meals. In some instances however, in which the patient's digestive organs are not very sensitive, the iodides may be taken with advantage while fasting, especially if combined with a vegetable bitter, like quassia or cinchona. In the formula which I have given you for the mixed treatment, you are likely to criticise the combination of incompatibles and the administration of the irritating bichloride, but if you reflect, you will see that the ingredients are rationally compatible, although not chemically so. We have a chemical reaction in the mixture, which results in the formation of the biniodide, which is very active by virtue of its being in the nascent

condition. When it is necessary to push the dose of the iodides, do so by adding a saturated solution of sodic or potassic iodide, to be taken in doses of five drops thrice daily to begin with, and to be subsequently increased one drop daily at each dose, until the limit of tolerance has been reached, or until the symptoms yield, when the dose may be reduced, the favorable result meanwhile continuing. It is sometimes necessary to use mercurial inunctions in addition to the iodides, and the local application of the oleate sometimes assists in the cure of the lesions amazingly.

The deep-seated ulcerations,—especially those of the throat,—syphilis of the bones, and syphilis of the brain and cord, often require enormous doses of the iodides before they exhibit any signs of yielding. In the venereal wards of the New York Charity Hospital, a daily dose of two or three hundred grains of potassic iodide was nothing unusual, and Van Buren relates a case in which nine hundred grains were given daily for eleven days. In my own service we had several cases in which the drug was increased to a daily allowance of four hundred grains. I must acknowledge, however, that I was never fully satisfied as to the purity of our hospital drugs, and Van Buren himself told me that he did not believe it possible for a patient to

tolerate the amount of iodide which we so commonly gave at the hospital, if the drug were pure. It would seem that a pair of kidneys would be rather worthless, after eleven days work at the daily elimination of two ounces of the iodide. Making due allowance for adulterations however, the doses which some patients will tolerate, are amazing. I have one patient who has taken three hundred grains daily for nearly three weeks, and I am certain that the drug is perfectly pure. On the other hand we meet cases which will not tolerate even small doses of the iodides.

Like the unpleasant effects of mercury, those of iodine require more than casual attention. In the first place, the iodides may cause sudden and severe ptyalism in patients who have been taking mercury freely, simply by suddenly liberating and rendering active the latter drug. On this account, caution should be exercised in the use of the iodides in such cases as have been under a prolonged course of mercurials. You will find in every case, that the iodine has a special action upon the salivary glands, whether the patient has been taking mercury or not. If you will take a ten grain dose of the iodide of potassium, you will find that you can taste the iodine most distinctly in a very short time, and that your saliva, and the

mucus from your nasal passages, will exhibit a decidedly yellowish tinge. The nasal mucus especially, will be greatly increased in amount.

The most important of the evils which may be caused by the iodides is the condition known as "iodism," This consists in a feeling of depression and malaise, nervous irritability, tinnitus aurium, neuralgic or rheumatic pains in various situations, especially in the bones and muscles, and irritation of the various mucous surfaces, especially those of the eyes and nose. The latter symptom may be merely a mild coryza or may amount to a very severe inflammatory œdema of the conjunctiva, nasal and lachrymal apparatuses. Severe diarrhœa and vomiting, with severe griping pain, may occur from the irritant action of the drug, and may necessitate its complete suspension for a time. Often, however, the treatment may be continued by substituting the sodium for the potassium salt, limiting the diet to rice and milk, and giving large doses of the subnitrate of bismuth. When given as I have already suggested, by beginning with small doses and gradually increasing until the limit of tolerance is reached, there is usually little difficulty in administering large doses of the iodides.

Eruptions of the skin are liable to occur from the iodides, and some patients appear to have an

idiosyncrasy which renders them peculiarly liable to the occurrence of eruptive phenomena, even when quite small doses are given. I have a patient at the present time who cannot take the iodide in ten grain doses for a day, without the development of red painful swellings upon his limbs. In the same way we find patients who are liable to extreme iodism, from very small doses. A professional gentlemen of my acquaintance cannot tolerate the drug in doses of two or three grains without the development of a severe coryza in a few hours.

There are three principal forms of eruption which may result from iodine and the iodides, viz: acne, erythema, and purpura. Of these eruptions, acne is the most frequent, and may be slight or quite extensive, the pustules varying from the size of the head of a pin, to quite extensive phlegmonoid abscesses. Erythema when it occurs, is usually situated upon the nose, cheeks, or forehead, and is followed by branny desquamation. It may however, run into eczema. Any of these forms of eruption may be attended by considerable heat and itching.

Severe and well-marked purpura hemorrhagica, is occasionally noted in cases of tertiary syphilis treated by large doses of the iodide of potassium. In such cases we have the combined evil pro-

pensities of the syphilitic cachexia, and large doses of iodine, to explain the profound blood changes to which the purpuric extravasations are attributable.

All of the evil effects of the iodides, rapidly disappear upon the cessation of the drug, and the administration of such tonics as quinine, iron, and cod liver oil, with free doses of such diuretics as the citrate or acetate of potassium. The cause of the evil phenomena described, is usually defective action of the kidneys, hence the advisability of promoting free diuresis during a course of the iodides. Acne, in certain special cases of idiosyncrasy, may be prevented by the administration of Fowler's solution of arsenic, conjointly with the iodides.

There is a great tendency on the part of the profession, to recommend various new and questionable preparations in the treatment of syphilis. Certain vegetable preparations have enjoyed a more or less long-lived popularity in this respect. Sarsaparilla was long thought to be a specific. Among the new preparations are cascara amarga, berberis aquafolium, stillingia and other drugs, alone or in combination. I advise you to try these things, in the firm belief that you will soon discover their fallacies, and come back to our reliable friends,

iodine and mercury. As bitter tonics they are all more or less useful, but as specifics they are arrant humbugs. A certain quasi patent medicine, known as "Mc. Dade's mixture," and composed of various vegetable ingredients, was introduced a short time ago, and I am sorry to say, was fathered by no less a man than Marion Sims, and indorsed by some other very good men, who must feel proud of the distinction of having attached their testimonials to a remedy which is now heralded in every newspaper, as the popular remedy for syphilis. As a matter of fact, it is on a par with its quite as respectable contemporary, the three S's, as a therapeutic agent. Tayuga is another remedy of doubtful origin which was recommended some years ago, and which Dr. J. Nevins Hyde, of this city, gave a fair trial in syphilis, with, he claims, negative results. The bichromate of potassium has been recently recommended, but I have had no experience with it. It is best to be liberal, and give different remedies a fair trial, irrespective of their origin, and such has been my custom, but I think that you will find that the proportion of cases of syphilis which is curable by the judicious use of mercury and iodine, is so large, and so gratifying, that you will waste no unnecessary time upon new and strange drugs.* In conclusion I will mention

* Bumstead and Taylor estimate the proportion of cures at about 95 per cent., but this is somewhat exaggerated.

two remedies which are decidedly beneficial as a tonic in syphilis, viz., the fl. extract of coca, and iodoform. Coca is an excellent tonic when used conjointly with strictly anti-syphilitic treatment, and tends decidedly to relieve the nervous depression from which most syphilitics suffer. Iodoform will be found most useful in cases which do not tolerate mercury and iodine well, and should be combined with the exsiccated sulphate of iron or the iron by hydrogen, the latter perhaps being the most useful and convenient.

Before leaving the subject of the treatment of syphilis, I desire to call your particular attention to several little items in the local management of the disease, which may prove of great service to you. There is nothing of importance to add to what I have already said, regarding the treatment of the chancre itself, but some of the secondary lesions require attention. Mucous patches sometimes gives great annoyance, and refuse to yield to purely constitutional treatment, becoming sluggish and indolent. In such an event, the pure acid nitrate of mercury will be found to be the best application. Before applying it, the lesion should be dried with a piece of bibulous paper or absorbent cotton. The surface should then be thoroughly cauterized, after which it is again dried. The ni-

trate of silver may be used in the same manner. Sometimes cauterization is not tolerated, the sore becoming inflamed and irritable. In such cases the tr. benzoin co. will be found most effectual. It coats the lesion with a deposit of the gum benzoin, and in addition to its mildly stimulant and antiseptic action, protects the surface from irritation. When mucous patches hypertrophy, and form tubercles or condylomata, an application of hydrarg. bichlor. in collodion in a strength of four to twenty grains to the ounce, will be found to remove them very rapidly. Calomel, zinc oxide, salicylic acid and iodoform are also all quite useful applications. Washing the parts in salt and water followed by the application of calomel is also of service, as nascent bichloride is formed and acts very powerfully upon the lesions. In case of secondary or even tertiary lesions upon the face which are non-ulcerative, the solution of bichloride in collodion will be found to remove them quite rapidly. Be careful however, not to cause severe blistering of the skin by too powerful or too frequent applications. In case of ecthymatous or rupial ulcerations, frictions with the oleate are beneficial. Gummy ulceration, especially when situated in the mouth or pharynx, will be best treated by the application of benzoin. Although

iodoform is also quite effectual, it is far more unpleasant, for most people do not like to have such an odorous application, in so close proximity to their nasal and digestive organs.

We sometimes meet with cases of necrosis of the bones in various situations in late syphilis, or more properly speaking, the period of sequelæ. Try and determine whether the osseous troubles are due to syphilis or to mercury, and then treat them upon general principles. Remember that tonics are always indicated in these cases, and that the iodides are our main reliance, mercury if given at all, being indicated only in tonic doses. As a parting injunction in the treatment of syphilis, I wish you to remember that cleanliness is nowhere productive of better results than in this disease. The Turkish or Russian bath once or twice weekly, has an excellent general as well as local effect, and where possible, recommend them to all your patients.

Lecture VIII.

Congenital Syphilis.—Acquired syphilis of children.—Methods of acquiring the disease.—Methods of contracting the disease by hereditary transmision.—Necessity of caution in differentiating the acquired and congenital forms of syphilis in children.—Intra-uterine syphilis.—Syphilitic abortion.—Treatment of syphilitic abortion.—Occasional masquerading of congenital syphilis as "scrofulosis."—Peculiar appearance of the hereditarily syphilitic child.—Congenital syphilitic lesions of the skin and mucous membranes, nails, hair, bones, and viscera.—Apoplectic effusions.—Sudden death of syphilitic children.—Hydrocephalus from congenital syphilis.—Predisposition to tuberculosis.—Hutchinson's description of the teeth in hereditary syphilis.—The syphilitic countenance.—Prognosis and treatment of congenital syphilis.

Gentlemen: I have thought it advisable before leaving the subject of syphilis, to devote an hour to the discussion of the congenital form of the disease. I believe that this is a topic of practical importance, and one which although not entirely neglected by the more systematic works upon syphilis, has not often been presented in a practical manner. I have used the term congenital syphilis, in preference to "infantile syphilis," for the reason that children may acquire syphilis in a number of ways independently of hereditary transmission. When thus acquired, the course and various phenomena of syphilis are in no wise different from the same affection in the adult. A child may become inoculated with syphilis by kissing persons with oral or labial syphilides, such as mucous

patches, fissures and ulcers, or it may acquire it from nursing its syphilitic mother or nurse. The possibility of acquiring the disease by vaccination must also be remembered, although at the present day, when non-humanized virus is almost exclusively used, such an accident can only occur through the most gross and culpable carelessness.

There is also the possibility of contamination through attempts at sexual congress, by both male and female examples of depravity. I have myself seen two cases of syphilis in children, acquired in this manner. These instances have, however, no bearing upon congenital syphilis, excepting that great care is to be exercised in differentiating the two. An error here, might seriously compromise an innocent person on the one hand, or allow a guilty one to escape upon the other.

In the case of alleged vaccinal syphilis, care should be taken, else an innocent operator may be held responsible for the sins of the child's parents. *Remember gentlemen, that a diagnosis is difficult without a knowledge of the natural course of syphilis, and that a more or less typical course of syphilitic phenomena, following a pre-existing chancre, is the only positive proof of acquired syphilis, be the subject old or young.*

The methods of acquiring syphilis by heredity, we have already studied to some extent. It is

probable that either parent may transmit syphilis to the child, although as far as the father is concerned, the question of his power to procreate a syphilitic child, without first infecting the mother, is still sub-judice. Otis claims that the presence of the syphilitic cell, is incompatible with life in the spermatozoa, but it would be necessary to demonstrate the cell as an entity, before it could be admitted as a necessity in this particular method of transmission. The probable truth is, that while the presence of the syphilitic germinal cell is necessary in order that the semen should be inoculable, its presence is unnecessary in order that the father should infect the fœtus. This results from the fact that the spermatozoa of a man who is in the flower of syphilis, have been so modified that they are incapable in some instances of generating a healthy child. The child need not necessarily be affected by the ordinary phenomena of syphilis, but may present certain perversions of growth and nutrition, which are not ordinarily considered to be syphilitic. That syphilis may so impress the spermatozoa, that the child may be cachectic and ill nourished, if not actually syphilitic, is probably true. It is almost beyond doubt, that the syphilitic impress is liable to masquerade as rickets or scrofulosis in the child. Independently

of theoretical reasoning, it is a positive fact that the children of apparently healthy mothers, by syphilitic fathers, are often affected by certain conditions of mal-nutrition which are singularly benefitted by anti-syphilitic treatment, and which are probably "attenuated syphilis." That the mothers are not really syphilitic, is of course an open question, but in a large proportion of cases, the evidence is in their favor.

It is an undisputable fact, that when the mother is syphilitic, the offspring rarely escapes. Her power of transmitting the disease lasts much longer than that of the father, as may be readily explained, if we stop to consider the intimate anatomical and physiological relations which exist between the fœtus in utero and its mother. The exception of the mother who becomes pregnant while healthy, and does not become infected with syphilis until the seventh month, is to be borne in mind in considering the probability of the mother infecting her child.* It has been demonstrated that the female may procreate syphilitic children, long after she has lost the power of infecting a healthy man.

As a matter of practical importance it had best be remembered, that while it remains to be positively shown, that either parent may infect the child independently of the other, cases have occurrred

*Diday, "De la Syphilis des Nouveaux-nés."

which seem to prove its truth, and until the question is absolutely settled, it is best to be cautious, and remain upon the safe side.

The changes in the fœtus which result from the syphilitic infection or impression, are of vital importance, and often decide the question as to the birth of a living syphilitic child. The ovum may be blighted early in the course of utero-gestation and be cast off, or absorbed, or it may develop to a greater or less extent, according to the severity with which the syphilitic infection manifests itself. The disease may manifest itself in several ways, and sometimes in a rather obscure fashion. A general shriveling or dwarfing of the structure of the fœtus may occur, with resulting death, and a consequent abortion. Serious visceral lesions sometimes occur, and destroy life, e. g., I recall a case in which a woman miscarried and was delivered of a still-born child, whose liver was so enormously hypertrophied as to cause serious difficulty in delivery. Intra-uterine hydrocephalus is an occasional result of syphilis, and I once saw Dr. Mundé perform craniotomy upon a case of this kind, in the New York Maternity Hospital.

Disease and malformation of the osseous system are frequent results of syphilis, and it is my own conviction that many congenital deformities de-

pend upon imperfect development, resulting from intra-uterine syphilis. These however, are the more obscure manifestations of the disease.

Apoplectic effusions often occur in the syphilitic fœtus, and if all aborted syphilitic children were examined critically, much light might be shed upon the effects of syphilis upon the vascular system.

Well marked eruptions are apt to occur upon the fœtus in utero, and most syphilitic fœtuses will present some unmistakable external lesion.

It is exceptional that a woman in full syphilis, succeeds in carrying a child to term, even when under quite active treatment. Abortion usually occurs, and is perhaps most often due to death of the fœtus, which then acts as a foreign body, and is cast off. It is not unusual however, for the abortion to occur as a result of placental changes. Placentitis hemorrhagica, fatty and waxy changes in the placenta, all interfere with its uterine attachments primarily, and secondarily affect the vitality of the fœtus by interfering with the interchange of nutritive material, necessary for its sustenance. Placental apoplexy is especially apt to bring on abortion, particularly when the blood extravasates upon its attached surface. When the hemorrhage is parenchymatous, abortion is not so likely to occur.

Syphilis is one of the most potent causes of abortion, and when a female, however healthy, aborts frequently, a suspicion of syphilitic taint is justifiable.

The treatment of syphilitic abortion is of necessity the administration of mild mercurials throughout the course of pregnancy. *It by no means follows, that because a woman aborts as a result of syphilis, she must necessarily give birth to a syphilitic child, hence it is always just and conscientious to try to carry the pregnancy to full term.* The better the apparent health of the mother, and the later the period of the disease, the more eminently proper such a course becomes.

When a syphilitic child goes on to full term, which often occurs, it may be born apparently healthy and well nourished, but as a rule it develops symptoms of inherited syphilis within a few weeks. In the majority of instances, syphilis develops before the child is three months old. In some cases however, some years elapse before symptoms develop, and then they are more or less marked. Cases have been related in which lesions of the pharynx, viscera and bones occurred in adult life for the first time, the childhood of the patient having been apparently healthy. It is probable moreover, that a generation may be

skipped before the syphilitic impression manifests itself.

As has been already asserted, many of the cases of disturbed nutrition termed struma or scrofulosis, are probably syphilitic. Hutchinson and Astley Cooper, both tacitly admitted this in their day, and Cooper's favorite remedy for scrofula, consisted of bichloride of mercury in Huxham's tincture of cinchona bark.

In the majority of instances, a syphilitic child is indelibly stamped with the hereditary impress. It is as a rule, remarkable for its pinched, shrivelled appearance, due probably to a lack of fatty tissue from malnutrition. The new born baby has the look of an old man, and if it lives long enough, it has often the most supernatural look of intelligence that could well be imagined. This wise little old man is as remorseless as fate, in divulging the sins of his parents. He says little, but expresses much, and he is a burden greater than the "Old Man of the Sea" as long as he lives.

If not present at birth, lesions of various kinds develop from time to time. I have seen a child born with a well marked roseola. Chaps and excoriations of the quasi-mucous surfaces about the genitals, anus and mouth, are apt to develop, and may form true *plaques muqueuse* or even condy-

lomata. A scalded appearance of the anus, is quite characteristic. Snuffles develop after a time, and the nares become so clogged up, that respiration and nursing are interfered with, and nutrition still farther impaired. This ozœna may lead to necrosis of the nasal cartilages.

A livid macular eruption is sometimes seen, and ulcerations may form about the mucous orifices. Papular and pustular lesions are not infrequent, and quite characteristically affect the palms and soles in certain instances. Subcutaneous tubercular lesions may be seen in some few cases.

A very peculiar eruption is sometimes seen in syphilitic children, which is quite identical in its physical characteristics with ordinary pemphigus in the adult. This "infantile pemphigus" is an unmistakable evidence of syphilis. It consists of an eruption of bullæ or blebs, sparsely distributed over the skin. Sometimes but one or two bullæ are present. It is especially apt to affect the palms of the hands and soles of the feet. The blebs are filled with fluid which varies in its physical characters from slightly turbid serum to pus. When the cuticle yields, the fluid dries into a greenish crust, and ulceration occurs beneath, precisely as in syphilitic ecthyma or rupia.

It has been claimed that infantile pemphigus may result from simple cachexia, but this is not

probable, and it may generally be accepted as an evidence of syphilis. When a syphilitic child develops pemphigus, a bad type of disease is evidenced, and the case is usually hopeless.

Another almost pathognomonic indication of syphilis, may occur in the form of keratitis. This is often attributed to scrofula.

The epithelial appendages of the body, such as the hair and nails, are not so likely to become affected in congenital syphilis as in the adult, but a brittle, lustreless condition of the nails is occasionally noted. As Hutchinson has shown, the nails may be repeatedly shed, or they may split and become ragged in appearance. They may even become affected by suppuration of the matrix, or onychia.*

It has been generally accepted that the osseous lesions of children are insignificant as compared with the same changes in the adult syphilitic. This is however a mistake, and in my own experience I have been able to observe a considerable number of bone lesions in children. In fact, one of the most frequent lesions observed in the cases of congenital syphilis at the N. Y. Charity Hospital was syphilitic inflammation of the bones. It was the exception rather than the rule, that serious visceral lesions were unaccompanied by osseous

*Hutchinson. "Patholog. trans." XII. 259.

troubles. Taylor has called especial attention to the lesions of the bones in congenital syphilis.* This eminent authority has shown that the most frequent seat of the osseous lesions is at the diaphyso-epiphyseal junction of the long bones, certain bones however, being affected with especial frequency. This is explained by the fact that the processes of growth and nutrition, are most active at the junction of the diaphysis and epiphysis of a bone in any situation.

Most frequently the bone is more or less uniformly enlarged, although in certain instances the periosteum seems chiefly affected. Suppuration is infrequent, but is described by Bouchut as a result of softening of the cartilages of the epiphysis.† Necrosis is not very frequent.

The most important of all the manifestations of hereditary syphilis are the lesions of the viscera. The processes of growth and nutrition in the infant are very active, and constructive changes are especially favored. These circumstances are particularly conducive to the proliferation of young connective tissue, in the parenchyma of the viscera. When present, these interstitial proliferations are usually diffuse, circumscribed gummy changes being exceptional. Such cases however,

* R. W. Taylor, "Bone Syphilis in Children."

† Bouchut, "Maladies des Enfans Nouveaux-nés," 1861.

are related. Any or all of the viscera may be involved, the connective tissue changes being especially apt to affect the liver, spleen and kidneys.

There is in syphilitic new-born children, a marked tendency to apoplectic effusions in various situations, particularly in the meninges of the brain, and probably also the cord. The condition known as cephal-hæmatoma is most apt to occur in syphilitic children, in whom the vessels seem to be characterized by great tenuity. If the labor be at all difficult, or if forceps be used, there is great danger of intra-cranial or sub-pericranial effusions. I have noted three cases of meningeal hemorrhage in new born syphilitic children, and four cases of cephal-hæmatoma, three of which were undoubtedly syphilitic. In one case the child developed a cephal-hæmatoma soon after birth, which absorbed in a few weeks. During the fourth week the child developed convulsions and died. On autopsy extensive changes in all the viscera were noted, and upon the surface of the brain, a large clot from a ruptured meningeal vessel was found. In one of the cases of meningeal hemorrhage which I have seen, the child was found dead by its mother's side, and a suspicion of foul play was entertained. The autopsy however, showed an extensive meningeal hemorrhage.

Cases of sudden death in syphilitic children, have been occasionally noted by other observers, but there seems to have been no autopsy in the majority of instances, at least no explanation for these cases has been given, as far as I am aware. It is probable that some of them have been due to meningeal hemorrhage.

Children are apt to develop hydrocephalus, as a result of syphilitic inheritance. I recall to mind a family in which two children died of this disease, as a result of congenital syphilis. The so-called rachitic appearance of the skull is often a manifestation of syphilis.

It is probable that congenital syphilis, has a more or less marked influence in the causation of tubercular meningitis. It may not give positive evidence of its presence by a development of unequivocal syphilitic disease, and yet may so impair nutrition as to develop a deposit of tubercle. The syphilitic soil, is one in which the tubercular process will flourish.

The most accurate description of the symptoms of hereditary syphilis that has ever been given, is that of Mr. Jonathan Hutchinson. The syphilitic countenance as described by him is quite characteristic, and his description of the teeth, in hereditary syphilis, is classical. The evidences given by

the teeth are not pathognomonic, nor are they always present, even when positive signs of syphilis exist, but in general they are very valuable.

The permanent teeth, instead of being regular, and symmetrically developed, are irregular, notched and pegged in appearance, and the conformation of the alveolar arch is imperfect. The two upper central incisors are the "test teeth." They are short, vertically notched, narrow and rounded at their corners.

"Next in value to the malformation of the teeth," says Hutchinson, "are the state of the patient's skin, the formation of his nose, and the contour of his forehead; the skin is almost always thick, pasty, and opaque It also shows pits and scars, the relics of former eruptions, and at the angles of the mouth are radiating linear scars, running out into the cheeks. The bridge of the nose is almost always low, and broader than usual, often it is remarkably sunken and expanded. The forehead is usually large and protuberant in the region of the frontal eminences; often there is a well marked broad depression a little above the eyebrows. The hair is usually dry and thin, and now and then the nails are broken and splitting into layers." Interstitial keratitis is pathognomonic of inherited taint, and when co-incident with the syphilitic type of teeth, the diagnosis is beyond a doubt.

The prognosis of congenital syphilis, is of course very unfavorable. The earlier the eruptions or other symptoms appear, the greater the danger. Marked eruptions occurring shortly after birth, indicate a fatal prognosis. Severe and early ozœna, in badly nourished children, is of like import. Marked visceral lesions and apoplectic effusions, are always fatal. Lesions of the bones, if unaccompanied by marked visceral changes, are not so unfavorable. In cases of enteritis syphilitica, a lesion described by Lancereaux, there is no hope of saving the child.

In the face of the unfavorable prognosis of hereditary syphilis, it is some consolation to know that as a rule, a syphilitic child is better dead, for it is a constant danger to its friends, and its life is at best but a miserable one. Sometimes, however, a syphilitic child becomes fat and healthy, under proper treatment.

The treatment of congenital syphilis, is to be carried out in two ways, viz.: by direct medication, and indirectly, through the system of the mother.

The best internal remedy for the child, is the hydrarg. cum creta or gray powder. This may be given in doses of from one, to three or four grains three times daily. In very young children, inunctions of the ung. hydrarg. or hydrarg. oleatis

must be depended upon. A good plan is to spread a piece of blue ointment the size of a large filbert, upon the flannel binder once daily. The delicate skin of the child absorbs this quite readily. Daily cleansing with soap and water, and frequent shifting of the position of the band, are necessary to avoid irritation. The soles of the feet, axillæ, and flexures of the joints, are also eligible situations for inunctions.

In older children, the bichloride of mercury may be given in small doses, in combination with some vegetable bitter, like Huxham's tincture. Parvules of the hydrarg. cum cretæ, protiodide, or mild chloride are also useful.

The general condition is always to be borne in mind in treating congenital syphilis, and cod liver oil and iron will always be of benefit. The syrup of the iodide of iron is the best preparation. Young children absorb cod liver oil readily, when given by inunction. The oleate of mercury may be combined with the oil. Good and sufficient nourishment is always required, but the child should not nurse from its mother, unless it is positive that she not only has, or has had syphilis, but is in fair general health. A syphilitic child should never be reared by a healthy nurse, that is, one who has not had syphilis. In general, good cow's milk is the

best for the child. I will say something with reference to the nursing of syphilitic children, in the next lecture.

When the child is nursed by its mother or by a nurse, it may be treated through the medium of the breast milk, by the iodide of potassium. This drug is eliminated in great part by the mammary glands, and this physiological fact is therefore of therapeutical service in hereditary syphilis. From five to ten grains may be given four or five times daily, care being exercised in regard to the production of gastro-enteric irritation in both mother and child.

The local management of congenital syphilis is often of importance. Perfect cleanliness is a paramount indication. Ulcers and excoriations should be kept clean and dry, and dusted with calomel or oxide of zinc. Condylomata are to be treated as in the adult. Ozæna requires local treatment, and a nasal douche of some antiseptic solution is useful. The preparation known as Listerine is useful for this purpose. It should be diluted with about three or four parts of water, and used three times daily. Be careful not to use harsh applications in syphilitic lesions of children, as their delicate skins are very intolerant of such measures.

Lecture IX.

The nursing of syphilitic children.—Possibility of a healthy child being born of syphilitic mother, and of a syphilitic child being born of apparently healthy mother —Attenuation of virus by passing through the system of fœtus.—Belief of Hutchinson in the primary infection of the fœtus.—Analogy of syphilization of fœtus to inoculation with virus of variola. Escape of the child from infection after 7th month of pregnancy.--Individual insusceptibility to infection —Analogy of syphilization to vaccination.—Danger of infection of child by syphilitic mother, and vice versa.—A desirability of artificial feeding.

Gentlemen: In accordance with a promise which I made you some time ago, I desire to say a few words this morning regarding the nursing of syphilitic children, a subject of quite practical interest and importance.

The question of the management of infants who are the subjects of hereditary syphilis, or who are the children of syphilitic mothers, and in whom the disease is likely to develop, has received comparatively little attention at the hands of syphilographers, Fournier having perhaps given the subject more attention than the majority of observers. The conclusions to which his studies in this direction have led him, are, first, that the child of a syphilitic mother should be given to her to nurse, even if it present no evidences of syphilis, as it will almost inevitably exhibit the disease, and would run the risk of infecting a non-syphilitic nurse.

Second, that if the child be syphilitic and the mother apparently healthy, it should still be nursed by her, as there is no danger of maternal infection by the infant. The consideration of the management of the infant, in case both mother and child have apparently escaped, but the father is in the active stage of syphilis, is passed by with the assertion that there is absolutely no danger to either mother or child, if maternal nursing be allowed. The question of nursing an infant born free from syphilis, although its mother has the disease, and it having escaped as the result of a mercurial course administered to the woman during gestation, is not dwelt upon.

It is a practical fact that in the cases of children who have inherited syphilis, but in which the mother has apparently escaped the disease, no clearly defined instances have been reported of the infection of the mother by the infant, and this fact affords the foundation for "Colles law," so called, viz., that a child born syphilitic will not infect the mother. The reverse is also held to be true, viz., that a syphilitic mother is in no danger of infecting her child, it being apparently healthy, unless her disease has been contracted subsequent to delivery, in which case she is ultra-contagious to it. This has been variously explained. One very

plausible argument is that the mother already has, or has had syphilis, contracted either before, or during the pregnancy in question.

This would imply, that it is impossible for a syphilitic child to be born of a healthy mother, or in other words that it is absolutely impossible for the father to transmit syphilis to his child, without the mother being secondarily infected. Others deny the possibility of the child inheriting the syphilitic taint from the father, excepting secondarily, through the medium of the mother.

If these views be correct, then the disease must exist in the mother when she appears to remain healthy, in an exceedingly mild form; so mild in fact, that its manifestations escape observation, or it must remain latent for a longer or shorter time, and finally manifest itself by some of the lesions characteristic of the late period of syphilis. This might result from the fact that the disease expends its violence upon the child in utero, thus rendering the infection of the mother comparatively mild, or the secondary period of the disease might be represented and replaced by the manifestations which occur in the fœtus, thus exempting the mother from affections of a secondary character, but rendering her none the less liable to the tertiary forms. In the first instance, the changes in the

fœtus, could be said to produce an attenuation of the specific principle, just as the virus of other infectious diseases may become attenuated by successive inoculations.

Hutchinson believes the explanation to be in the manner of the introduction of the "virus" into the maternal system, using as an analogy, the result of inoculation with the virus of variola, which produces a comparatively mild form of the disease, while inhalation of the same materies morbi, causes variola of the severest type. This implies that the syphilitic poison is modified in some peculiar manner by its passage through the fœtal circulation.* Fournier is undecided upon this point, and does not advance any very definite views, but unites with the majority of authorities, in advocating the indiscriminate nursing of the hereditarily syphilitic infant, by the mother, whether she herself appears to suffer from the disease or not.

None of the authorities quoted, state that it is absolutely impossible for the mother to be infected by the infant in such cases, but they simply advance the clinical fact that such infection has not occurred. Facts have been recorded by many observers, to show that it is possible for the

*Thus it is assumed by Hutchinson, that the fœtus may be infected with active syphilis primarily, and without the intervention of the maternal circulation. This is a mooted point.

mother to contract syphilis during pregnancy, without necessarily transmitting the disease to the child, this being especially true in case of her infection after the seventh month, in which instance, according to Diday, the child always escapes. This would appear to be a powerful argument against the mother nursing the infant, as long as it presents no manifestations of the disease, although she herself is affected by it, the lesions having shown themselves either shortly before, or immediately subsequent to delivery. The cases in which the infant escapes the disease, when it has existed in the mother for any length of time before delivery, must be exceedingly rare. Fournier thinks that he has seen a certain number. The instance may however occur, especially if the mother be brought under the influence of mercury sufficiently early.

If the mother be infected shortly before delivery, and secondary symptoms do not appear until after the birth of the child, it stands an excellent chance of escaping the disease, as far as heredity is concerned, although it is possible that it is in no wise insusceptible to infection by inoculation, either through the medium of the lesions present in the mother, or by a syphilitic nurse, if such be obtained; and the latter contingency may occur from the fact that syphilitic nurses are intentionally

procured in some instances in which the mother is syphilitic but the child apparently healthy, the belief being that syphilis will necessarily develop in the latter, and that it cannot by any possibility escape. The same plan is also advocated when the child presents unmistakable evidences of the disease.

It is undoubtedly true, that certain persons are insusceptible to syphilis and that the susceptibility of different persons varies greatly, as in the case of other contagious affections. It would appear then, more rational to infer, in certain of the cases of children born syphilitic, and in which the mother apparently escapes, that she was primarily insusceptible to infection, or that she exhibited a certain power of resistance to it, than to explain the circumstance by "some occult and indiscernible change in the maternal system." Might not the mother have a sufficient power of resistance, to enable her to escape infection through the fœtus in utero, and yet remain susceptible to inoculation? It is possible too, that she may have been insusceptible to syphilitic infection or inoculation during gestation, and yet might at any time become susceptible, the degree of susceptibility varying at different times, as is true of other infectious diseases.

In case the mother was primarily insusceptible to both infection and inoculation, there is evidently no danger of her contamination by the infant, but it is of course impossible to determine this. Under any of the other circumstances mentioned, there is evidently an element of danger.

Another consideration, is the possible analogy between the effects of the infection of the fœtus, upon the mother, and vaccinia, there being a certain degree of immunity from syphilis resulting, which lasts for a variable length of time. In this event, the mother may become susceptible at any time during lactation, and contract the disease from the infant. It is possible that in the same way, the infant may enjoy a certain amount of protection from infection, it being born healthy and its mother being syphilitic, although it may at any time contract the disease by inoculation.

If the mother and child have both apparently escaped syphilis, although it is present in an active form in the father, it is evident that one or both of them may be syphilitic, and lesions develop at any time, with a consequent danger of infection in the act of nursing, for it is impossible to say in some cases, exactly when the mother becomes infected. I would consequently strenuously object to maternal nursing under any of the circumstan-

ces I have mentioned, believing that there is a certain amount of danger in the practice, be that danger ever so slight. If however, the mother and child are both undoubtedly diseased, and the physical condition of the mother be such that she is able to nurse her infant, and her milk is of a fair quality, nursing should be allowed. It is evident that if the mother is not permitted to nurse the child for the reasons I have stated, an artificial substitute for mother's milk must be given. The same rules should guide us, as in the ordinary management of artificial infant feeding. Although there is a possibility of a child born of a syphilitic mother, escaping the manifestations of the disease during childhood, only to become the subject of its lesions later in life, I still think that in all cases it should have the benefit of the doubt, and should be reared by artificial feeding.

The mother, if syphilitic, is often in a condition of extreme malnutrition, thus rendering nursing not only injurious to the child, from the comparatively inferior quality of the lacteal secretion, especially if it be entirely depended upon for its support, but also injurious to her, by causing a still further drain upon her fund of vitality in the performance of the function of lactation. But it may be objected that "the child, if syphilitic, will

not thrive upon artificial nourishment, inasmuch as it is already the subject of a cachexia, with its concomitant impairment of nutrition." Now it is true, that in case the mother is in good condition and apparently free from syphilis, her milk is usually far the best food for the child, and gives the best possible prospects of rearing it; but this fact does not weigh very heavily in the balance when we reflect that the mother may have escaped syphilitic infection, and may possibly be infected by her syphilitic child in case it be allowed to nurse. The chance of the ultimate survival of the syphilitic infant, is small at best, and as for the difference between the prospective usefulness of the syphilitic child, and the possibly non-syphilitic mother, it is sufficiently obvious. We must also consider the fact that the child, even if syphilitic, may attain an age sufficient to enable it to withstand the tardy lesions of the disease, and that this possibility is greatly enhanced by the proper performance of its nutritive functions, which depends almost entirely upon good and sufficient nourishment, which it cannot obtain from a cachectic mother. In case a woman has been brought under the influence of mercury before delivery, and the child be born and remain for some weeks free from syphilis, there is a possibility of its escap-

ing the disease entirely, unless it receives it from its mother by inoculation, and inoculable lesions may occur upon her at any time. In such a case the possible danger of contagion should warrant us in interdicting nursing, and in the substitution of artificial food.

The practice of employing a syphilitic nurse to care for a syphilitic, or possibly non-syphilitic infant, requires but little comment, as there are few circumstances which would warrant it. If the child present unequivocable evidences of syphilis; if we have positive evidence that the nurse has had, or has the disease, and she is in good condition, her milk being of good quality, she may be employed. Under all other circumstances, I should most emphatically protest against nursing, and should advise an artificial substitute for the mother's milk.

APPENDIX.

APPENDIX.

As there are very few formulæ given in the preceding lectures, it has been thought advisable to append a list of some of the more useful prescriptions for the treatment of syphilis.

IN SECONDARY SYPHILIS.

℞ Pil. Hydrarg. Protiod.....1-5 gr. q. s.
(Garnier et Lamoreux.)

Sig.—Begin with one pill t. d. and cautiously increase until physiological effects are produced.

℞ Hydrarg. Protiod..... gr. xx
Ext. Taraxici..... q. s.
M. Ft. pil. No. C.
Sig.—From three to eight pills daily in divided doses.

℞ Hydrarg. Protiod..... gr. xx
Ext. Hyoscyami..... gr. x
Sacch. Lac..... ℥ i
M. Trit. subtilis et ft. chart, No. C.
Sig.—One to six powders daily at regular intervals. Opium may be added in lieu of the hyoscyamus, should gastro-intestinal irritation be a source of annoyance.

℞ Hydrarg. Biniod..... gr. iv
Ext. Hyoscyami..... gr. x
M. Ft. pil. No. lx.
Sig.—One pill three or four times daily. To be used only when the stomach is extremely tolerant.

℞ Pil. Hydrarg..... gr. c
Ferri. Sulph. Exsiccat..... gr. l
M. Ft. pil. No. l.
Sig.—One to eight pills daily. Bumstead's pil. duo. especially useful in anæmic patients, and as a tonic in late syphilis.

℞ Hydrarg. Tannat..... gr. x
Ext. Lactuc..... gr. xxx
M. Ft. pil. No. xxx.
Sig.--One to five pills daily. Especially recommended as unlikely to produce gastro-intestinal disturbance.

℞ Hydrarg Bichlor..... gr. iv
Kalii Iod ..... ℥ vi
Elix. Simp..... ℥ iv
M. Sig.—℥i in water after each meal. The "mixed treatment" for late secondary lesions and the period of sequelæ, and to alternate with mercury during the entire course of syphilis.

℞ Hydrarg. Bichlor..... ... . gr. iv
Sodii Chloridi..... jii
Aquæ Dest..... ..... ℥ xiii
M. Sig.—For hypodermic use. Dose mxxx.*

℞ Hydrarg. Bichlor..... gr. ix
Sodii Chloridi..... gr. xl
Aquæ Dest..... ..... ℥ iv
M.--Add the albumen of one egg and filter. Dose M. xv hypodermically.†

N. B.—It should be remembered that the bichloride corrodes the needles and makes them brittle, hence care is necessary not to break them off in the tissues. They should be kept well oiled, to prevent corrosion.

* Stern. Progrés Medicale, Paris, 1878.

† Staub. "Treatment of syphilis by hypodermic injections of the chloro-albuminate of mercury," Paris, 1872. This mixture decomposes readily and tends to become cloudy. It must be freshly prepared, and carefully filtered.

FOR LATE SECONDARY, MALIGNANT OR PRECOCIOUS SYPHILIS, AND THE PERIOD OF SEQUELÆ.

℞ Kalii Iod..... ℥ vji
Hydrarg. Bichlor..... gr. ii
Tr. Quassiæ..... ℥ iv

M. Sig.—Dose ℥i well diluted.

℞ Ammonii Carbonat... ℥ i ss
Kalii Iod..... ℥ iii
Syr. Sarsæ Comp.
Aquæ Dest..... aa.. ℥ ii ss

M. Sig.—℥i three or four times daily.

Prof. Gunn's "three-eights" mixture.

℞ Iodinii Resub..... gr. viii
Kalii Iod..... ℥ viii
Syr. Sarsæ Co..... ℥ viii

M. Sig.—℥i three or four times daily.

FOR INFANTILE SYPHILIS.

℞ Sodii Bicarb..... gr. xx
Hydrargyri cum. cretæ..... gr. xl

M. Ft. chart, No. xx.
Sig.—One four times daily.

℞ Hydrargyri Chlor. Mit..... gr. ii
Sacchari Lac..... gr. xx

M. Trit. subtilis et ft. chart, No. xx.
Sig.—One four times daily.

N. B.—In children who are old enough to take them, the parvules of mercury with chalk, and of calomel, which are sold in the shops, are an excellent form for administration.

TONICS FOR THE SYPHILITIC CACHEXIA AND LATE SYPHILIS.

℞ Hydrarg. Bichlor..... gr. ss
Fl. Ext. Berberis Aq.
Tr. Cinchon. Co.....aa.. ℥ ii
M. Sig.—℥ii after each meal.

℞ Hydrarg. Bichlor..... gr. ss
Fl. Ext. Rumicis Crisp.
Fl. Ext. Cascaræ Sag.....aa.. ℥ ii
M. Sig.—℥ii after each meal.

℞ Liq. Arsen. et Hydrarg. Iod..... ℥ iss
Tr. Cinchon. Co..... ℥ iv
M. Sig.—℥i after each meal.

℞ Iodoformi..... gr. xx
Ferri Sulph. Exsic..... gr. xl
M. Ft. pil. No. xx.
Sig.—One four times daily.

LOCAL TREATMENT OF SYPHILIS.

FOR THE CHANCRE.

LOTIO FLAVA.

℞ Hydrarg. Bichlor..... gr. xviii
Aquae Calcis..... ℥ x
M. Sig.—Lotion.

LOTIO NIGRA.

℞ Hydrarg. Chlor. Mit.....gr. xxx
Aquae Calcis..... ℥ x
M. Sig.—Lotion.

℞ Ferri et Pot. Tart..... gr. xx
Aquæ ..... ℥ iv
M. Sig.—Lotion. In phagedænic chancre.

℞ Hydrarg. Oleat.....10%. ʒ i
Vaselinæ ..... ʒ i
M. Sig.—Ungt. For application to non-ulcerated indurations.

℞ Hydrarg. Chlor. Mit.. ..... ʒ ii
Zinci-Oxide..... ʒ ii
M. Trit. Subtil. Sig.—Apply twice daily, after drying the surface with bibulous paper.

FOR THE SYPHILIDES.

℞ Hydrarg. Oleat.....20%.. ʒ i
Cerati Simp..... ʒ i
M. Sig.—Ungt.

℞ Hydrarg. Bichlor..... gr. iv
Tr. Benzoini Co..... ʒ ii
M. Sig.—Apply with brush once daily. Especially useful in sluggish ulcerations.

℞ Hydrarg. Bichlor..... gr. iv
Tr. Myrrh..... ʒ i
M. Sig.—Apply with brush once daily.

℞ Hydrarg. Bichlor..... gr. xx
Collodionis..... ʒ i
M. Sig.—Apply every second day until skin shows signs of irritation, or lesions yield. Especially useful in condylomata and scaly lesions.

FOR MUCOUS PATCHES AND BUCCAL ULCERATIONS.

℞ Acid Chromici..... gr. x
Aquæ Dest..... ʒ i
M. Sig.—Apply with brush several times daily.

℞ Liq. Hydrarg. Nitrat..... q. s
Sig.—To be applied with glass rod, after careful drying of the surface.

IN LARYNGEAL SYPHILIS.

℞ Iodoformi..... ℥ ii
Glycerinæ..... ℥ i
M. Sig.—Apply daily with sponge probang.

℞ Iodoformi..... ℥ i
Æther Sulph..... ℥ i
M. Sig.—Apply daily with sponge probang.

FOR BONE AND JOINT LESIONS IN LATE SYPHILIS, AND TUBERCULAR SYPHILIDES.

℞ Hydrarg. Oleatis..... 10%.....
Ung. Iodinii Comp.....aa.. ℥ i
M. Sig.—Apply at bed-time.

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